

Thailand.

Edwin Teo

17 and 19, October , 2007



ABB Totalflow



Agenda

- ❖ **Overview of ABB Totalflow**
- ❖ **Overview of New Field Mounted Analyzer**
- ❖ **NGC Product demonstration**
- ❖ **Overview Flow Computers and RTU**
- ❖ **Questions**

ABB Totalflow

Who Are We?

We are in fiscal measurement of natural gas

- TF experts sit on AGA and API measurement committees

• We serve the global natural gas industry

- Production, transportation, distribution

• We provide to the natural gas industry

- Remote Flow Measurement & Control Systems,
- Gas Chromatographs,
- Communication Systems, and
- Host Software



Who is ABB Totalflow?



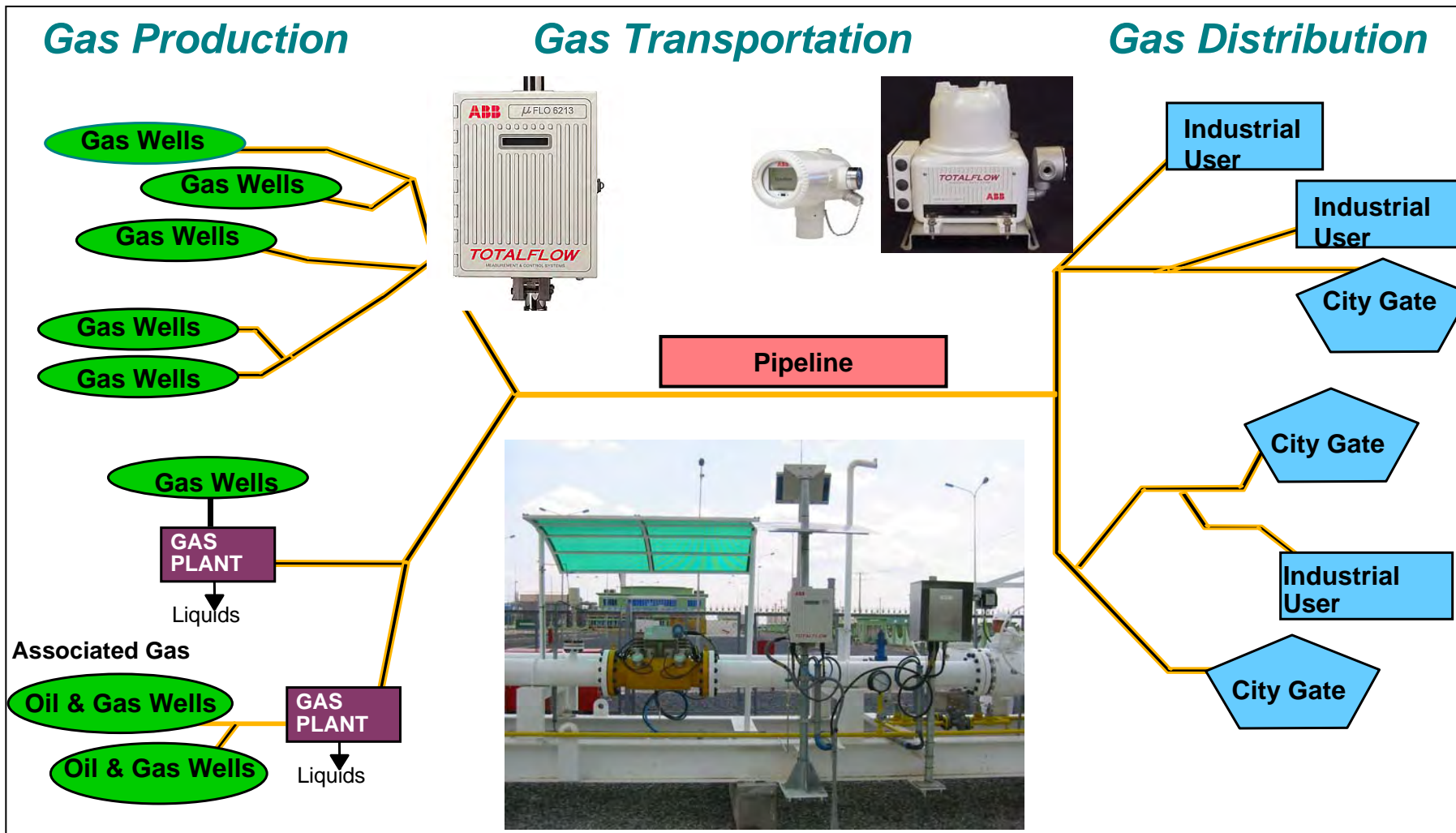
- Product Group in ABB's Automation Technology Division
- Based in Bartlesville, OK
- EFM was started as R&D project with Phillips 66 in 1982
- Natural Gas Automation
 - Exploration & Production
 - Gathering
 - Transmission
 - Distribution



Product Overview



Markets Served – ABB Totalflow



Model 8000/8100 Btu/CV Transmitter

Launch 1996

- Model 8000/8100 Btu/CV Transmitter; First:
 - Process GC with Automatic carrier pressure control
 - Low power process (on line) Btu analyzer (6 Watts nominal)
 - Windows based MMI
 - Automatic start up/Peak Find
 - Gas Chromatograph Module Coefficient (GCMC)
 - Plunger-less diaphragm GC valves (no moving parts)



ABB

Model 8000/8100 Development Path

**Original Model 8000
Launched 1996**



**Model 8000 EFR Version
Improved 2001**



**Model 8000 Type M
Re-engineered 2003**



**3rd Generation
NGC**



NGC Chromatograph Module Evolution



1st Generation Btu 8000 / 8100



2st Generation Btu 8000 / 8100 Type M



3rd Generation NGC 8200

NGC MEASURED COMPONENTS

- Air
- Methane
- Carbon Dioxide
- Ethane
- Propane
- Isobutane
- Normal Butane
- Neo Pentane
- Isopentane
- Normal Pentane
- Hexane +



Typical Natural Gas Composition

- Below is a “typical*” composition of a natural gas calibration blend in Mole Percent (1153.8 Btu):

N2	=	0.24 %
CO2	=	1.31 %
C1	=	86.39 %
C2	=	6.16 %
C3	=	3.46 %
IC4	=	1.08 %
NC4	=	0.80 %
IC5	=	0.27 %
NC5	=	0.15 %
C6+	=	0.14 %

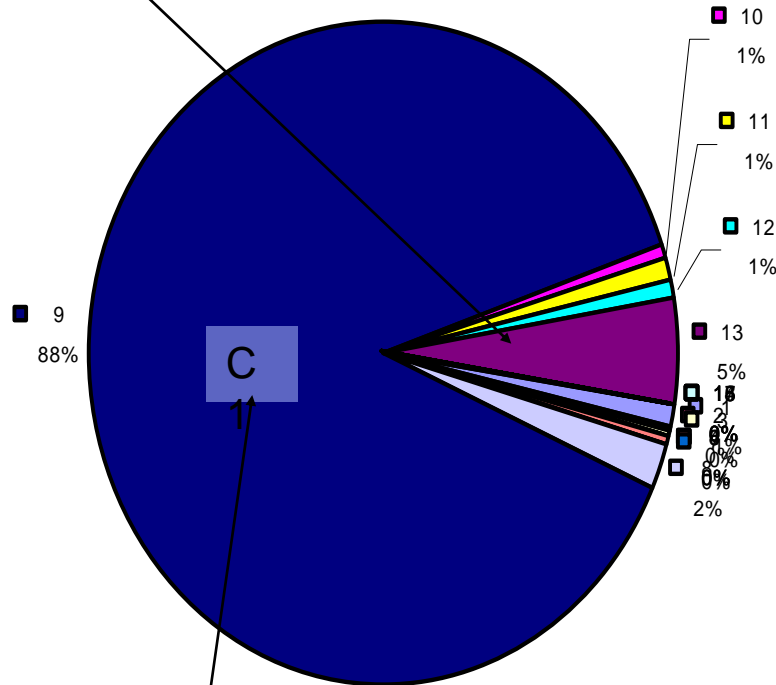


* Most Natural gas standard blends are around 1050 Btu, 100 Btu less than this one. This would then represent a fairly rich standard blend suited for production field gas.

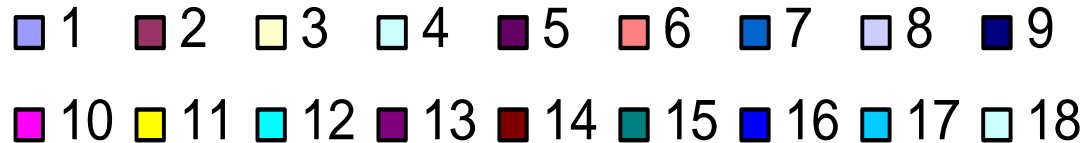
Energy (Heat) From Natural Gas

Natural Gas is a mixture. To calculate the heat energy, just add all the theoretical heat contribution from all the components.

$C2(0.0501) \times 1769 \text{ Btu/cf} = \text{C2 Energy}$



$C1(0.8973) \times 1010 \text{ Btu/cf} = \text{C1 Energy}$



Why On – Line Measurement ?

Lab Results Vs. On-line or Process Chromatography

- Seldom Agree.
- Differences In Sample Handling.
- Differences In Calibration Standards.
- Possible Sample Degradation.



NGC 8206-Imaginative Innovation



Innovations

- Compact design, transmitter-like usability
- Graphical interactive display in explosion proof enclosure
- Windows CE operating system
- Miniaturized conventional analytical components (not a GC on a chip)
- Integral flow computer with addition of multivariable transmitters
- Extremely economical



Precision

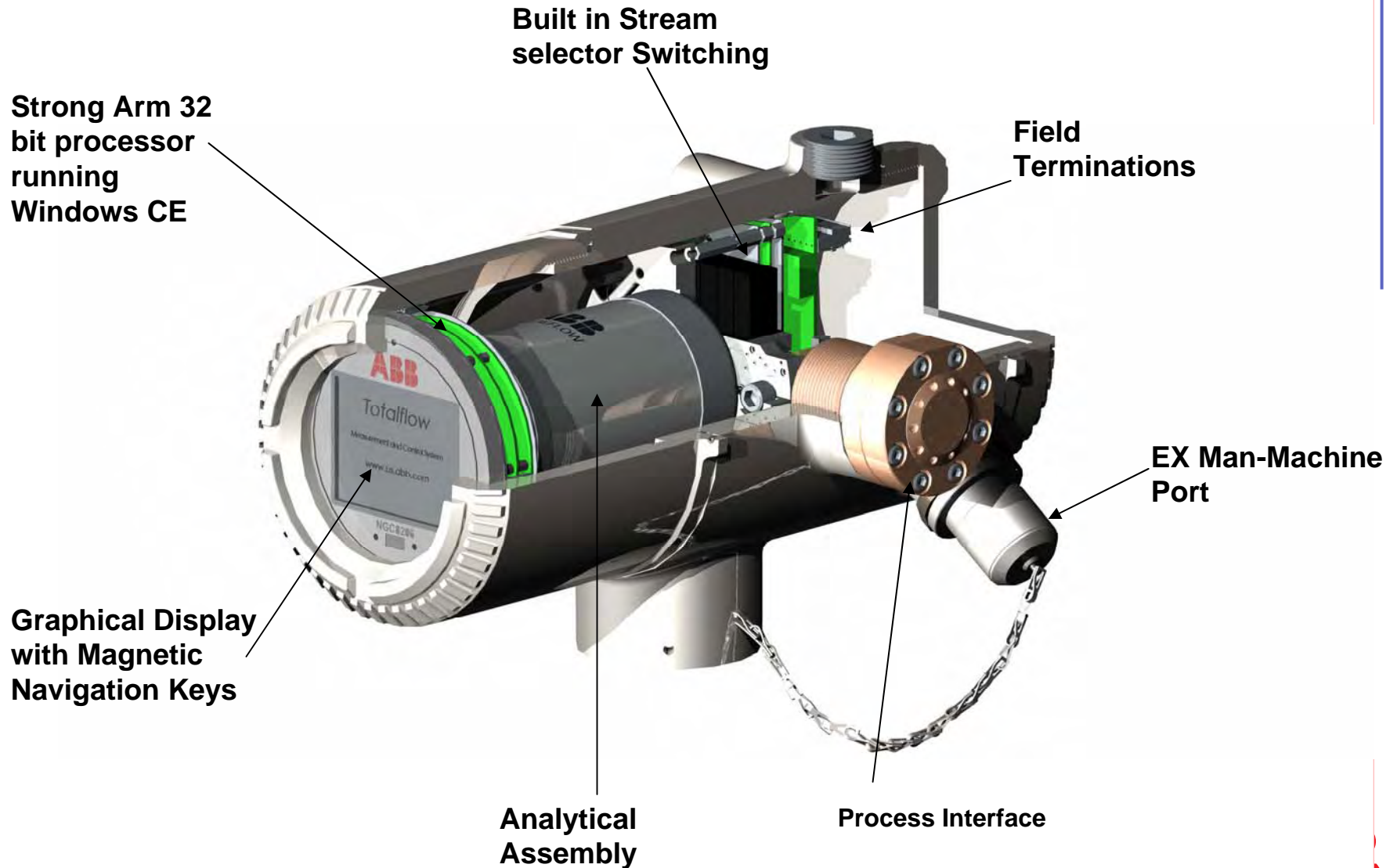
❖ Hardware and software infrastructure

- ❖ 32 bit digital controller *and* 32 bit analog signal processor
- ❖ 24 bit A/D for each detector bead
- ❖ Optimized detector bead operation
- ❖ Digital pressure and temperature control
- ❖ Triple level temperature control
 - ❖ - Beads - Heater plate - Feed thru
- ❖ Pressure sensors in oven (no temperature compensation required)
- ❖ Enhanced insensitivity to power supply variation

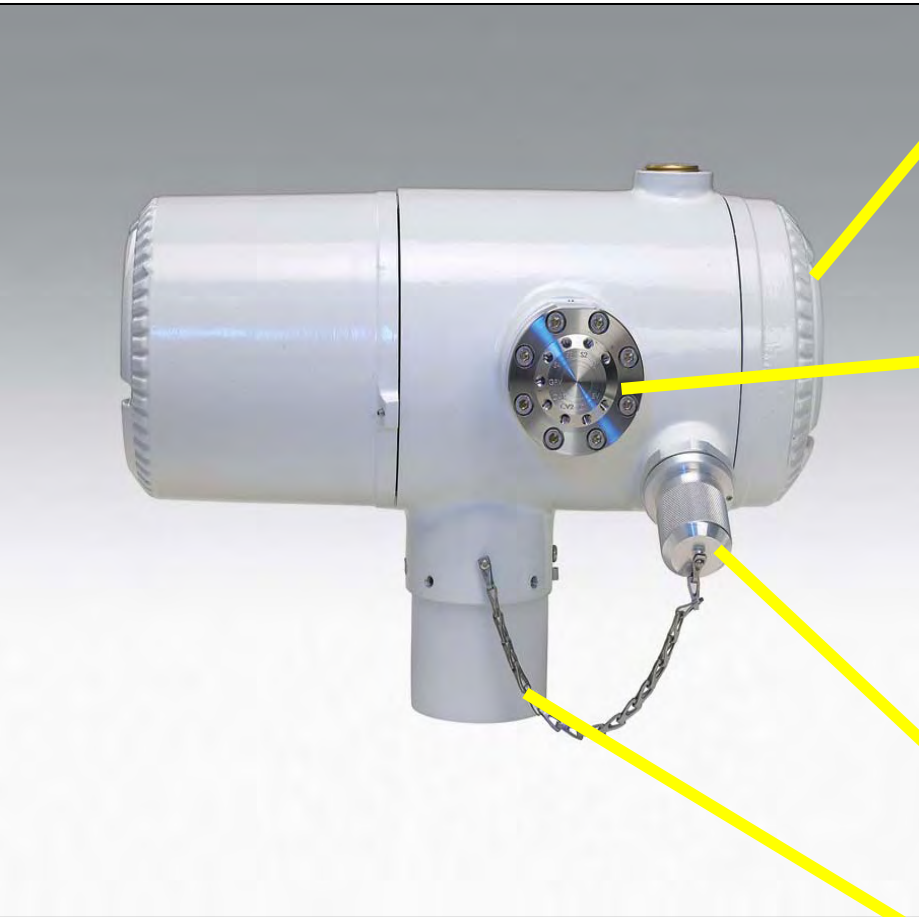


ABB

Compact Modular Design



Simplicity



❖ Easy Connections

- ❖ Versatile Serial, USB and Ethernet with a variety of Modbus Protocols

❖ Four Streams

- ❖ Any combination of process and calibration streams – examples:
 - ❖ 4 process streams
 - ❖ 3 process, 1 calibration
 - ❖ 2 process, 2 calibration

❖ Ex MMI Port

❖ Mounts Atop 2" Pipe

SIMPLICITY

SERVICEABILITY

COMPLETE UNIT CONSISTS OF ONLY
3 REPLACEABLE MODULES

SELF DIAGNOSTICS THAT
GENERATE LOG FILES

REMOTE OPERATION:
OFFSITE MAINTENANCE
BY FACTORY EXPERTS

**THE CORE ANALYTICAL
COMPONENTS ARE ON A
SINGLE, EASY TO INSTALL MODULE**



SIMPLICITY

- + Easy to install — compact size permits lighter-weight, small-footprint installation at the sample point
- + Easy to start up — factory-calibrated, ready to install using startup diagnostics, startup wizards
- + Easy to operate — Whether using the graphical local display with magnetic navigation keys or using the graphical MMI, as show below, simple operation is assured from the ground up
- + Graphical LCD magnetic touch display:
 - + View status, results, and chromatograms
 - + Invoke mode changes (cal, hold, run)
 - + User-configurable LCD screen

SIMPLICITY



MAIN ANALYZER INTERFACE SCREEN

- + Provides a simple yet powerful combination of GUI, navigation elements, and data



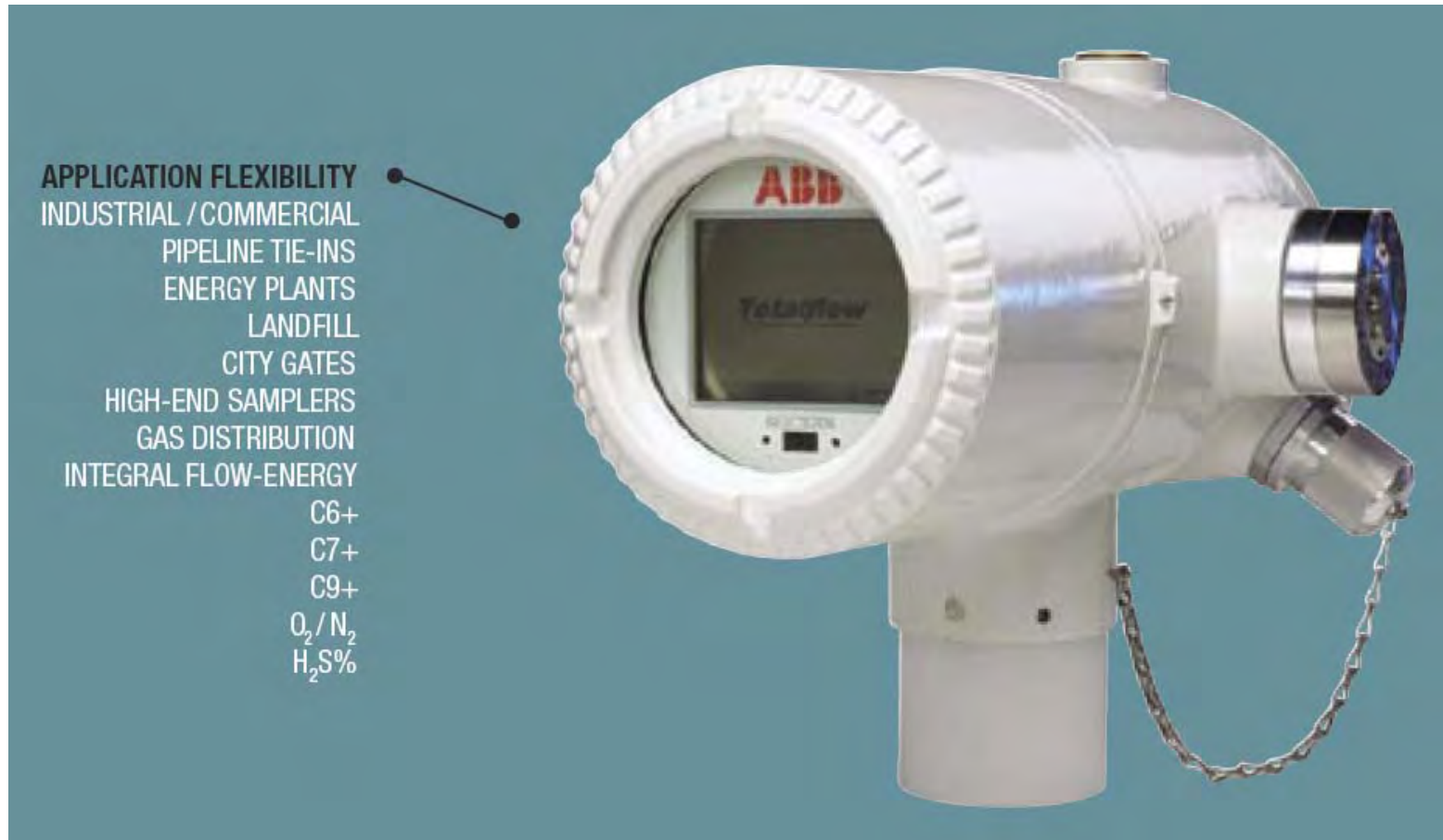
FLEXIBILITY

SOFTWARE FLEXIBILITY

- + NGC software is based on Totalflow's flexible XSeries framework; providing unmatched flexibility
- + Conversion to a total energy device simply requires adding the necessary number of multivariable transmitters and instantiating Totalflow's proven flow computer applications
- + Examples of other software flexibility
 - + Alarm by exception with cry-out
 - + General purpose data logger
 - + Programmable math / logic functions
 - + Programmable local LCD
 - + Configurable modbus register map
 - + Complex equations of state



FLEXIBILITY



An innovative new gas chromatograph.....

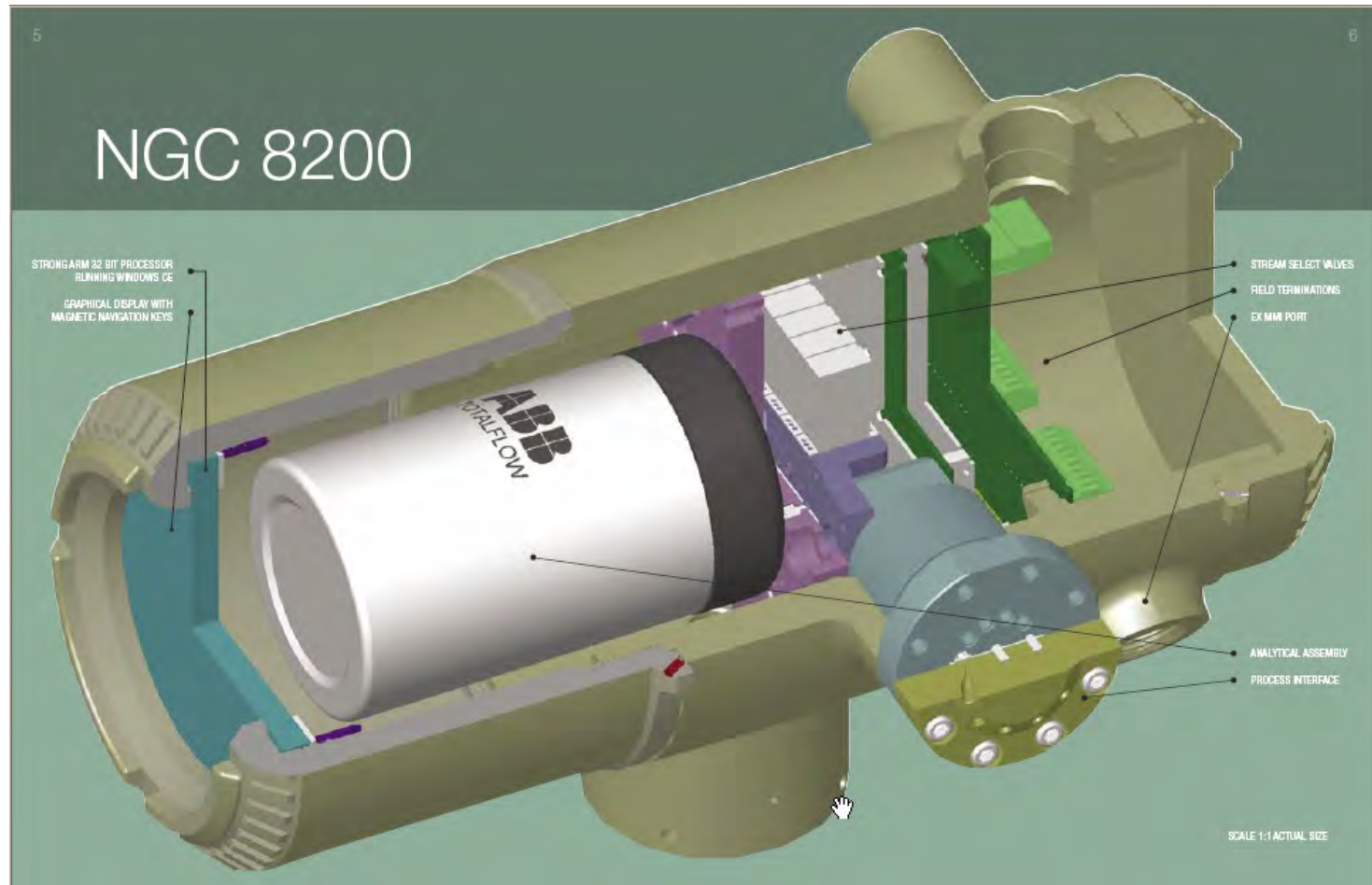
With the highest precision available.....

Designed to be simple to own and operate.....

Yet flexible for numerous applications.....



DESIGN



Compact Modular Design



DATA STORAGE

- Operator configurable data period and items
- Stream analyses averages results for last:
 - 480 cycles,
 - 840 hours,
 - 35 days
- 1 month Audit logs for last 128 alarms and last 128 events
- Data collected via remote communications link or laptop interface software

DATA STORAGE

- Configurable length and content diagnostic files. Examples;
 - Peak times, peak areas
 - Ideal Btu/CV
 - Carrier regulator pressure
 - Oven temperature
 - Ambient temperature
 - Sample pressure
 - Detector noise values
 - Detector balance values



NGC Specifications

- Five minute analysis time
- Up to four sample streams
- Up to two calibration streams available
- C6+ components
- Class 1, Division 1, Groups C and D; ATEX Zone 1
- Operating temperature 0-131 Deg F (-18 to +55C)
- Power consumption-7 watts nominal, 45 watts startup-
unit can be powered by 12 VDC battery / solar panel
- 10.5 -16 VDC or 18 – 28 VDC powered
- AC power options: 110 VAC or 230 VAC



Communications

- One ex local connection for laptop MMI
 - RS 232 or USB selectable
- Two software configurable serial ports (RS 232, RS 485 or RS 422)
- USB Host and client connection
- Ethernet
- Numerous protocols supported: Daniel 2251, Modbus ASCII and RTU, HClA,



Precision

❖ Analysis infrastructure

- ❖ Individual peak gating and integration
- ❖ Pressure programming on sample inject
- ❖ Optimized cycle time

❖ Results

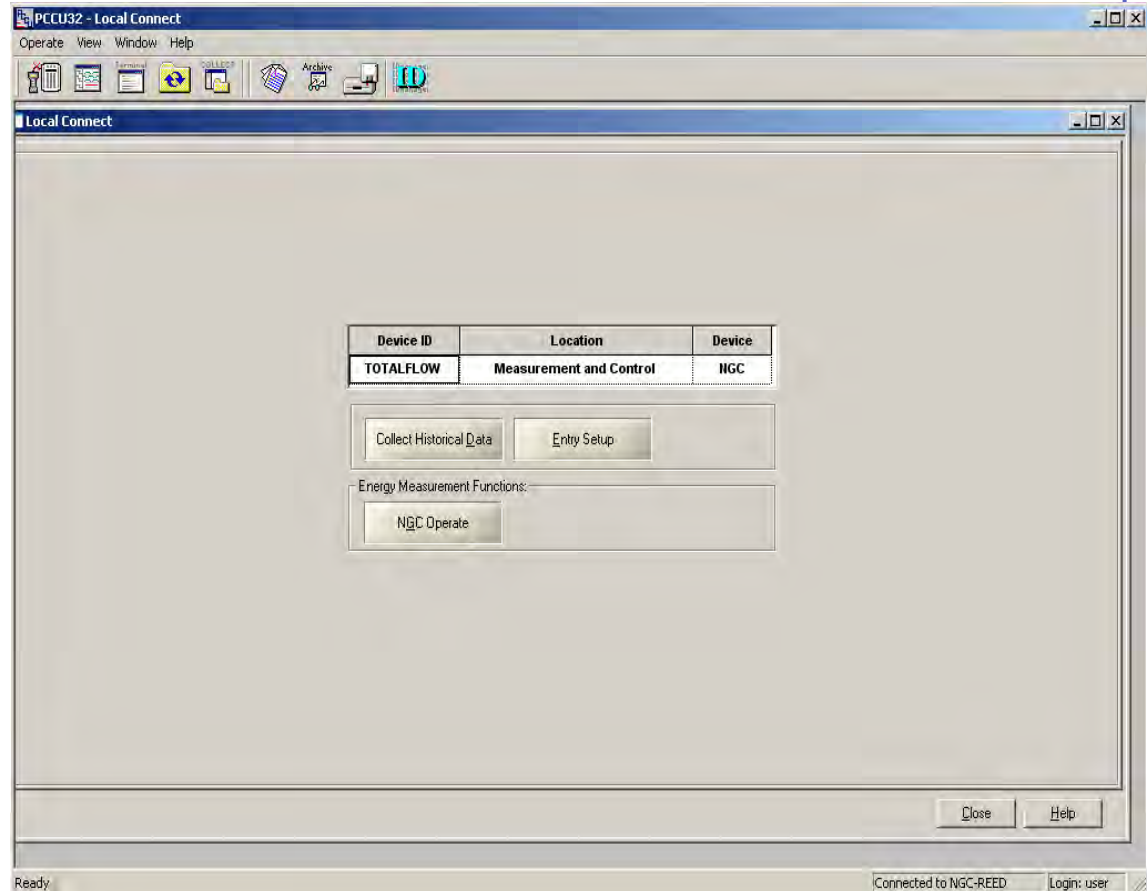
- ❖ Precision
 - ❖ +/- 0.125 Btu ambient
 - ❖ +/- 0.25 Btu from 0°F – 131°F (-18 to +55C)
 - ❖ Reliable operation -20°F – 131°F (-29C to +55C)
- ❖ 5 ppm minimum detection on NC₅ and CO₂



ABB

Flexibility

- Ways to connect using PCCU32:
 - RS 232 Local Device Connection using PC Comm port
 - USB Connection to Local Device
 - Internet connection using Fixed IP address
 - Internet connection using DNS supplied IP address



NGC Analyzer Menu Screen

NGC Menu

Analyzer Control	Chrom Display	Cal Results
------------------	---------------	-------------

Analyzer ID: NGC8206

Current Results	Alarms	BACK
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Alarm	Mode	Stream	Time
Normal	Run	???	0



NGC Results Display

Current Results

Stream No: Stream ID:

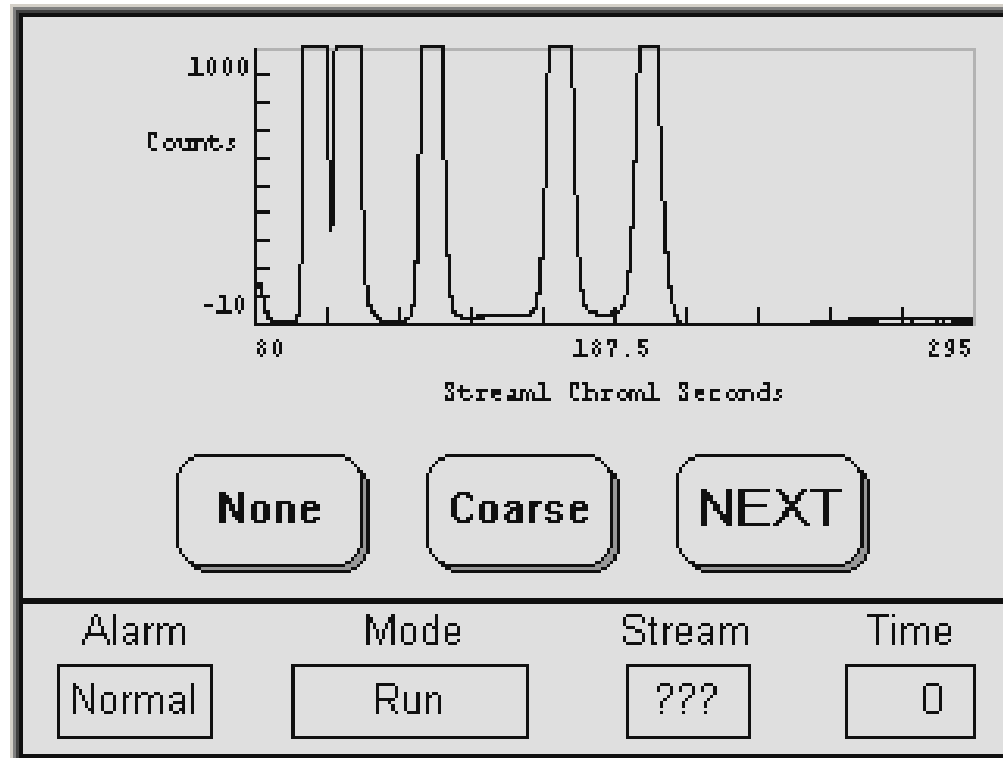
C3	2.38051
IC4	2.38051
NC4	1.00018
NEO	89.72090
IC5	4.97252
NC5	0.99952
C6+	0.29788
N2	0.29849
C1	0.09987
CO2	0.10179
C2	0.02840

Dry BTU	1056.65
Sat. BTU	19741.1
Sp Gravity	0.62484
Compress	0.99604
UnNorm	1336.73

Cycle Time:

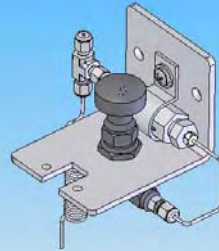
Alarm	Mode	Stream	Time
<input type="text" value="Normal"/>	<input type="text" value="Run"/>	<input data-cs="2" data-kind="parent" type="text" value="???"/>	

Front Panel Chrome Display

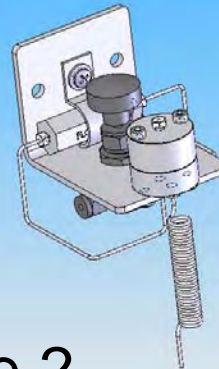


Simplicity

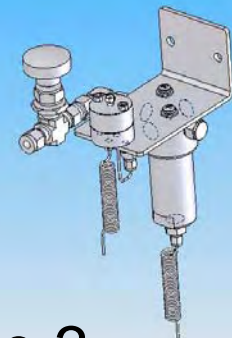
- Pre-defined Sample Conditioning Modules
 - Four types for different levels of sample contamination
 - Two for probes located 10 to 50' (3 to 15 Meters)
 - Two for probes located 50 to 150' (15 to 50 Meters)
 - One with a liquid cut-off when liquids are known to be present
 - Type 4 also available (Type 3 with water shut-off)



Type 1

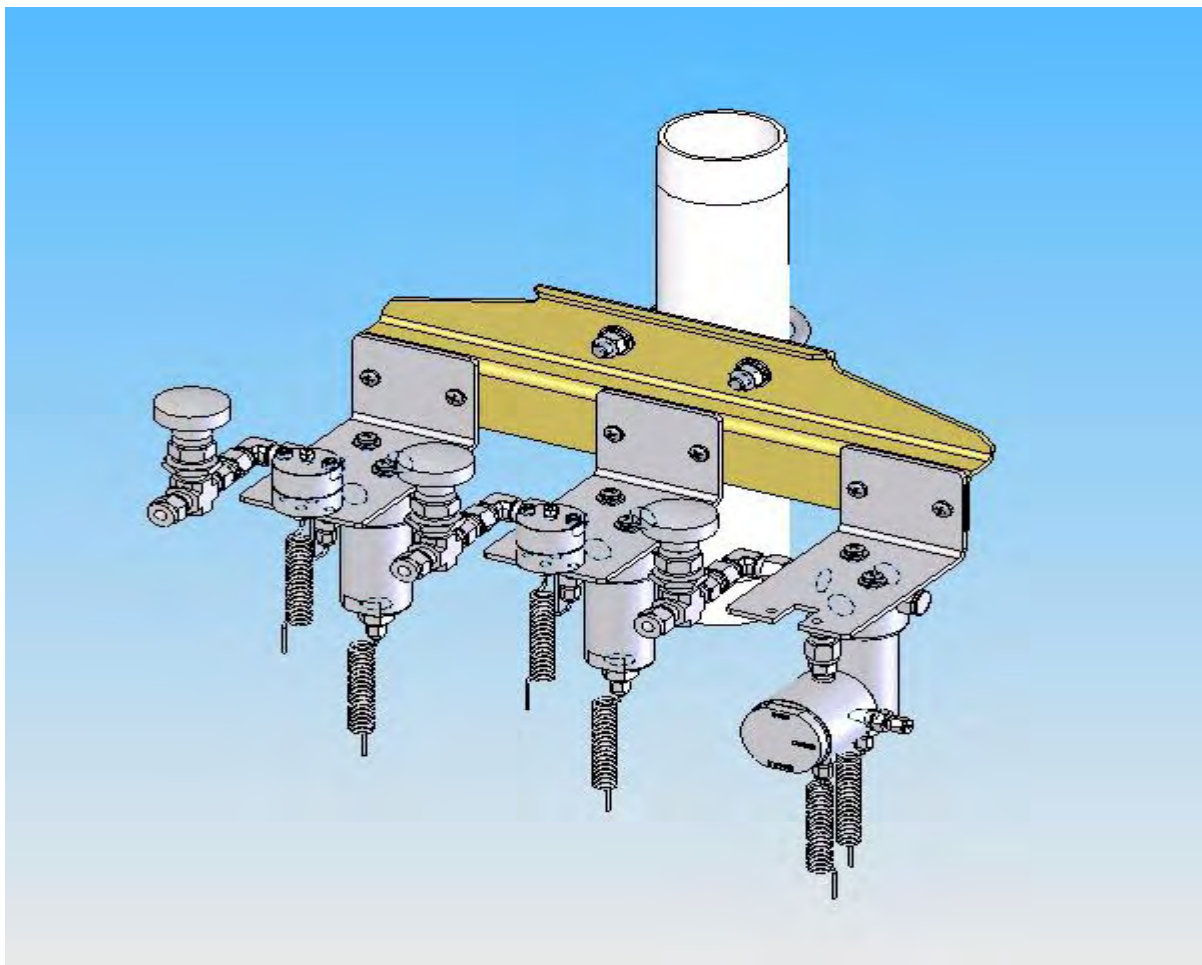


Type 2



Type 3

SAMPLE SYSTEM INSTALLATION



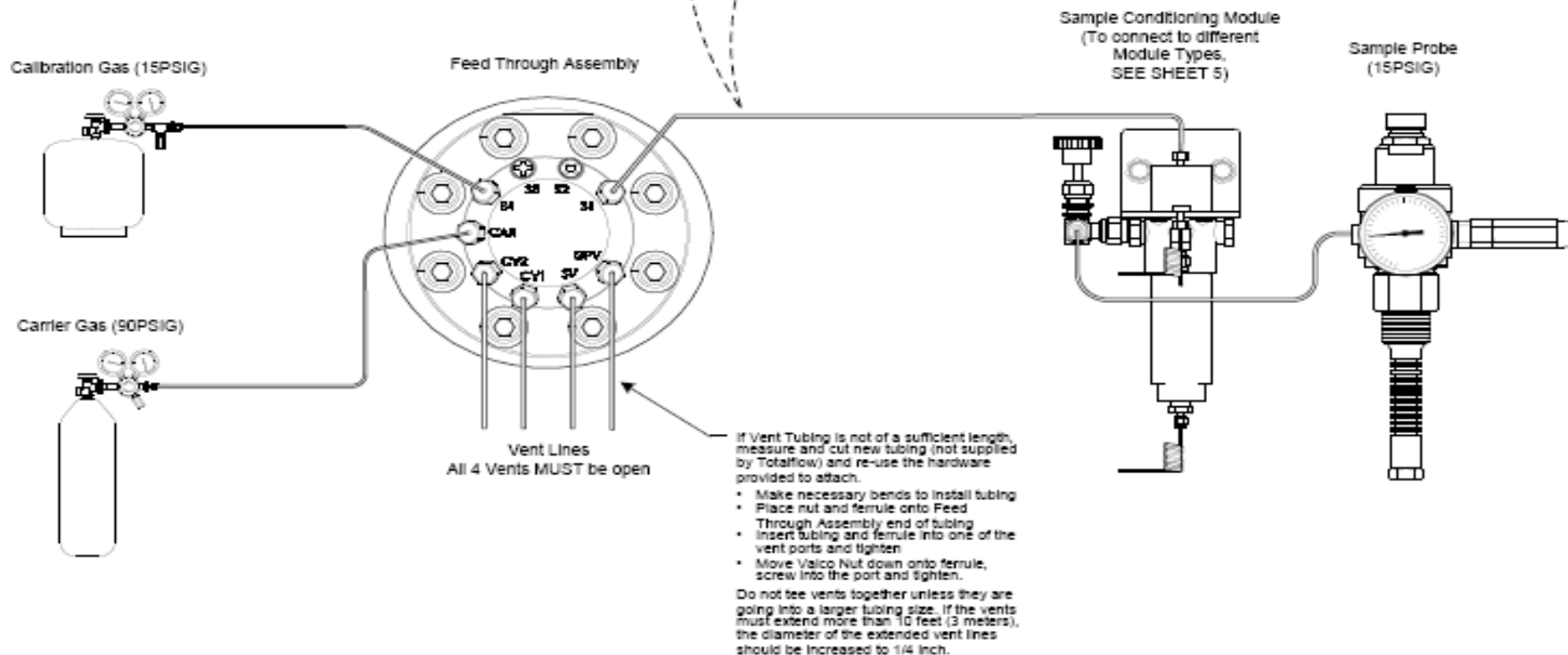
SAMPLE STREAM CONNECTION

NOTES:

- WARNING:** This drawing does not illustrate completely the installation methods required for hazardous locations. Prior to any installation in a Classified Hazardous Location, verify installation methods by the Control Drawing referenced on the product's name tag and national and local codes.

The Feed Through Assembly of the NGC is made to accommodate sample acquisition for up to 3 lines.

Tube additional lines from a Probe to the Feed Through Assembly as shown, for each. Each line must have its own Probe and a Sample Conditioning Module at the NGC.



Connecting Lines to the Feed Through Assembly

ABB	TOTALFLOW Products	ACTION	DOC TYPE	TITLE	REF: N/A		
					DWG NO.	REV	SHEET
		L19544	UD	INSTALLATION OF SAMPLE, CARRIER AND CALIBRATION LINES FOR NGC	2103085	AA	4 of 5

NGC INSTALLATION

NOTES:
1. All installations in hazardous locations must comply with requirements listed by certification drawings related to this equipment. Check for the certification number on the nameplate and follow the specified requirements of this equipment.

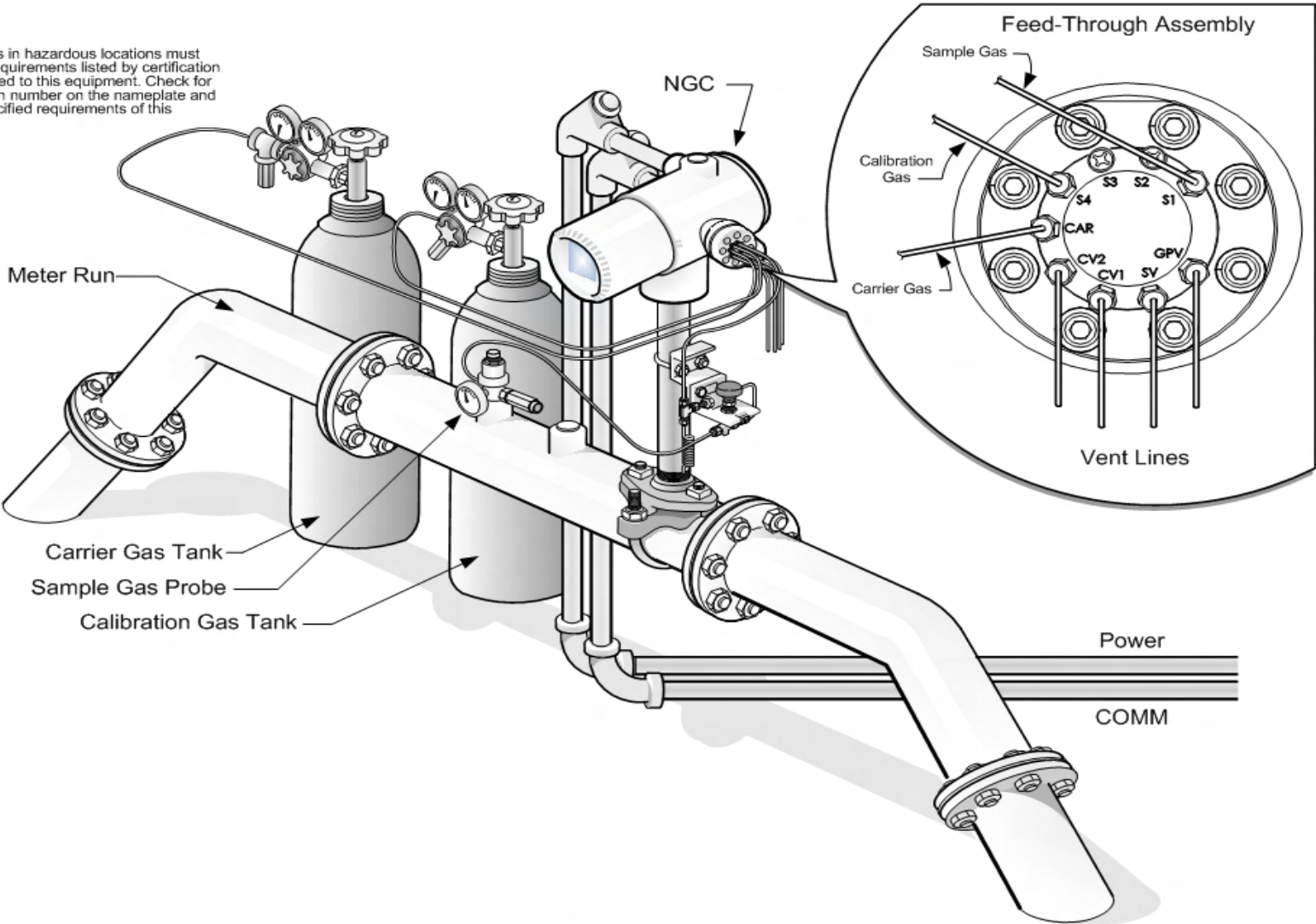


ABB	TOTALFLOW Products	ACTION	DOC TYPE	TITLE	DWG NO.	REV	SHEET
		XXXXX	UD	NGC SAMPLE COLLECTION	XXXXX	AA	1 OF 1



NGC MOUNTING METHODS

- Pipe Stand
- Wall
- Shelf
- Cold Weather Enclosure



PIPE STAND



Wall mount with enclosure – Location Texas



■ Conroe



Stealth Enclosure



- Conroe Texas location



COLD WEATHER ENCLOSURE



Versatility

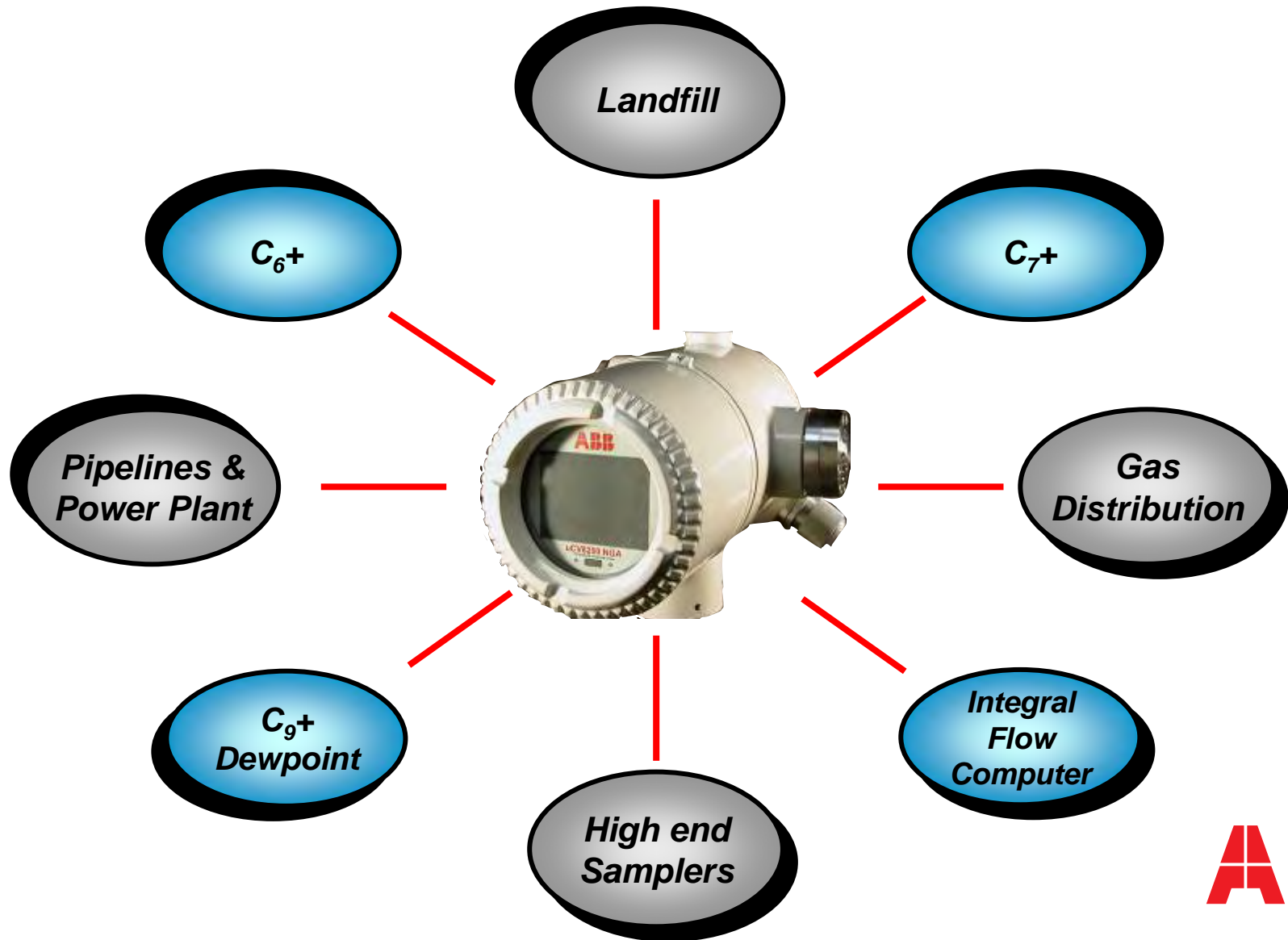
- Option: NGC Energy Meter – a fully functional flow computer / energy meter with addition of process inputs
 - (DP, pulse, P T) via serial port
- NGC can interface with other flow computers/RTU's supplying gas quality data
- NGC can maintain an audit trail for re-editing data if needed



Typical Totalflow Applications



Applications



NGC APPLICATIONS

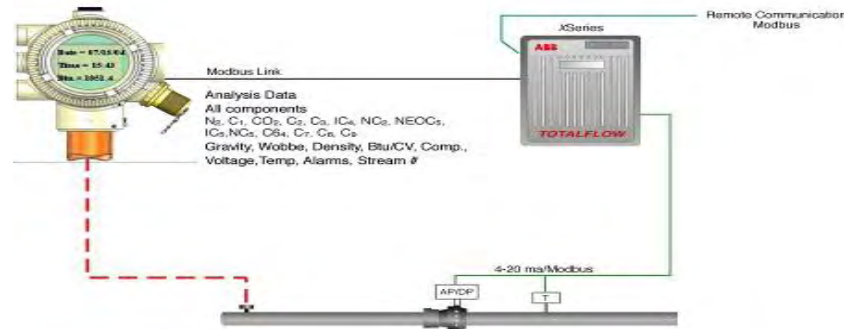
- **Custody Transfer Measurement**
- **Multi Tube Custody Transfer Measurement**
- **Gas Sampler Replacement**
- **City Gate Measurement and Control**
- **Feed Forward Plant Balance**
- **Ultrasonic Gas Metering**
- **Plant Process Analysis and Control**
- **LNG Re-gasification**
- **Blending Applications**



Custody Transfer Measurement

- Continuous update of Btu, composition and density numbers for energy calculations in the flow computer
- “Real time” gas quality prevents end of the month energy / volume recalculations
- Identify gas composition that is not in specification
- More accurate energy numbers for billing

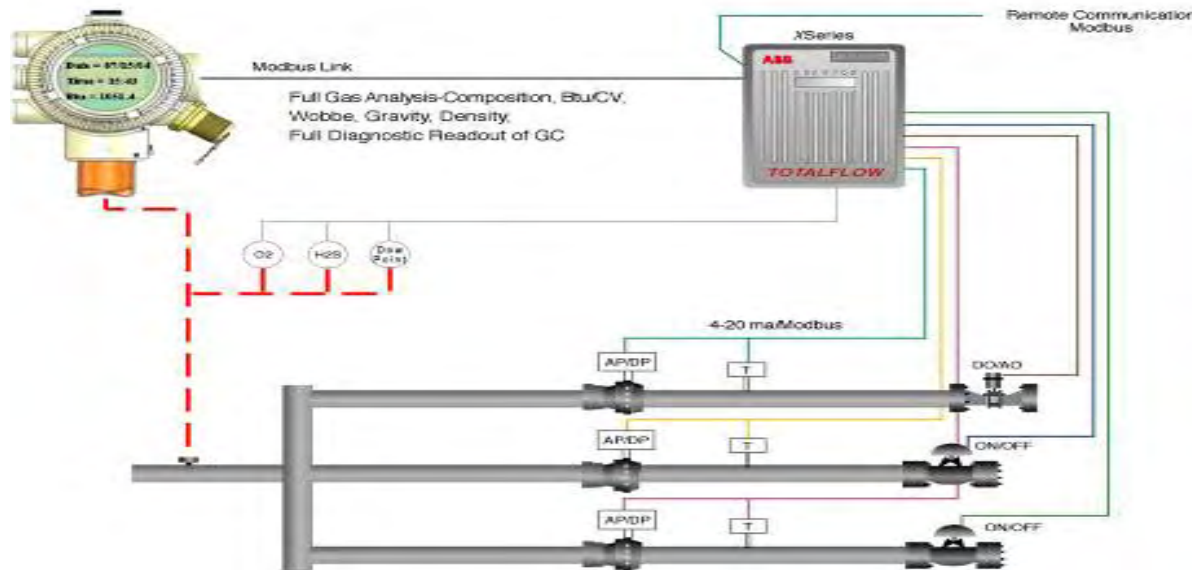
Single Tube Custody Measurement



Multi Tube Custody Transfer Measurement

- Provide gas quality information from 1 to 3 flow meters (tubes).
- Provide information for tube switching between multiple suppliers
- Provide all measurement calculations for energy station

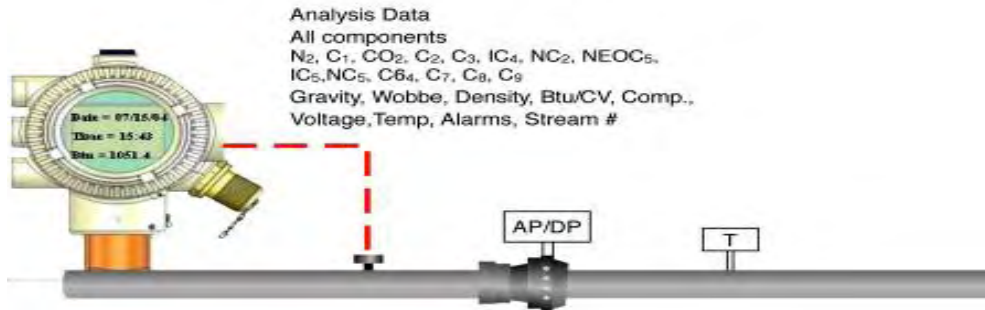
Multi Tube Measurement Stations



Gas Sampler Replacement

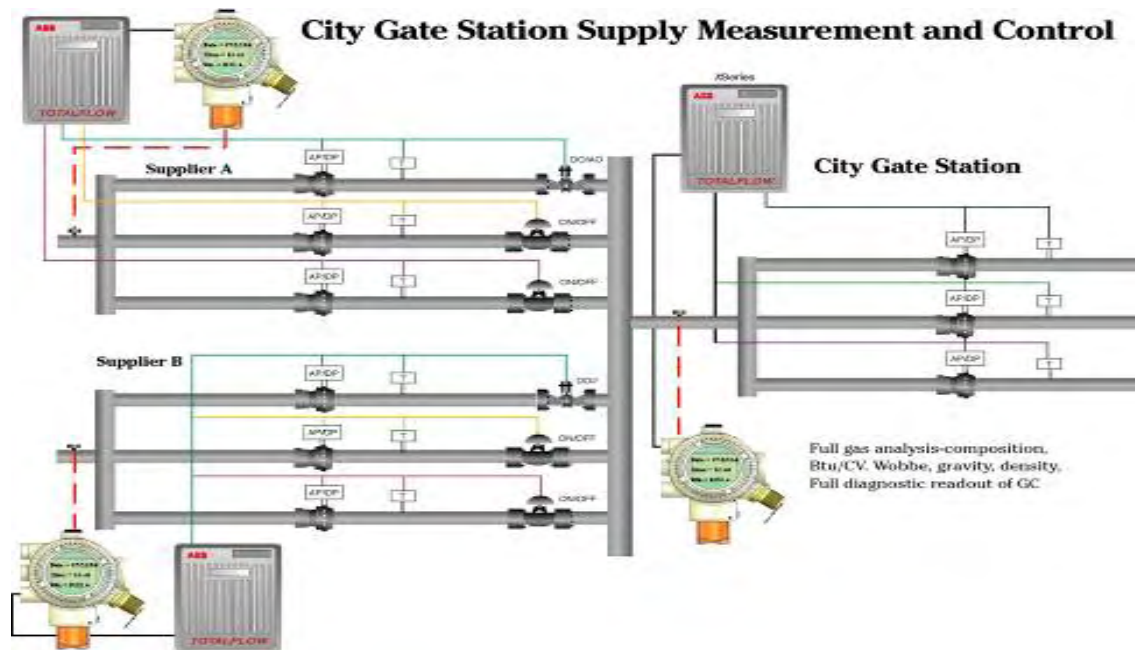
- NGC 8206 size is almost the same size as a continuous gas sampler
- “Real time” gas quality information eliminates end of month volume / energy recalculation
- Eliminates safety issues with sample bottle handling and transportation
- Eliminates transportation fees and lab charges for bottle analysis

Replacement of Gas Sampler



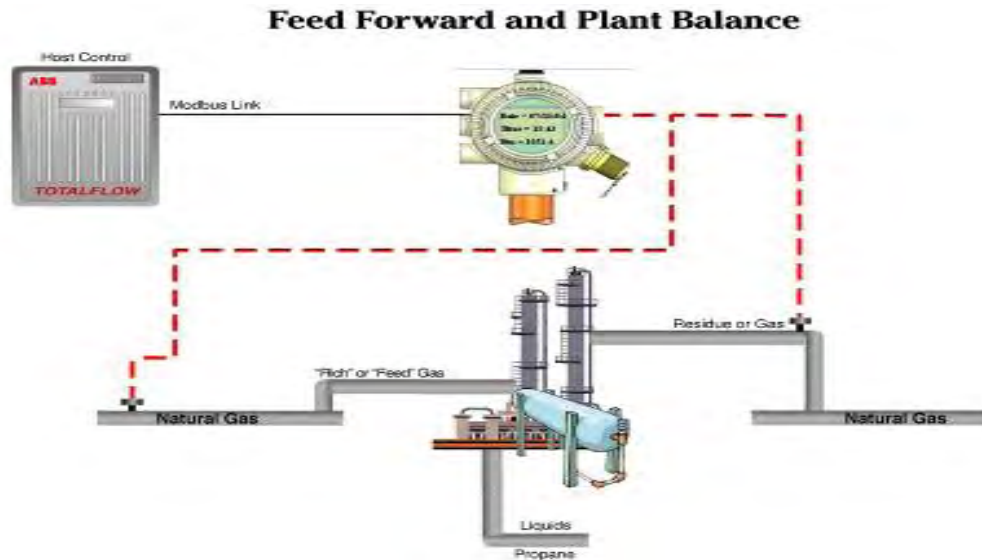
City Gate Measurement and Control

- Provide gas utility with quality information from two different suppliers
- “Real time” data allows best choice of gas supplier for utility customers
- Interfaces with flow computer to automatically select supplier
- “Real time” gas quality data for accurate accounting / daily nomination



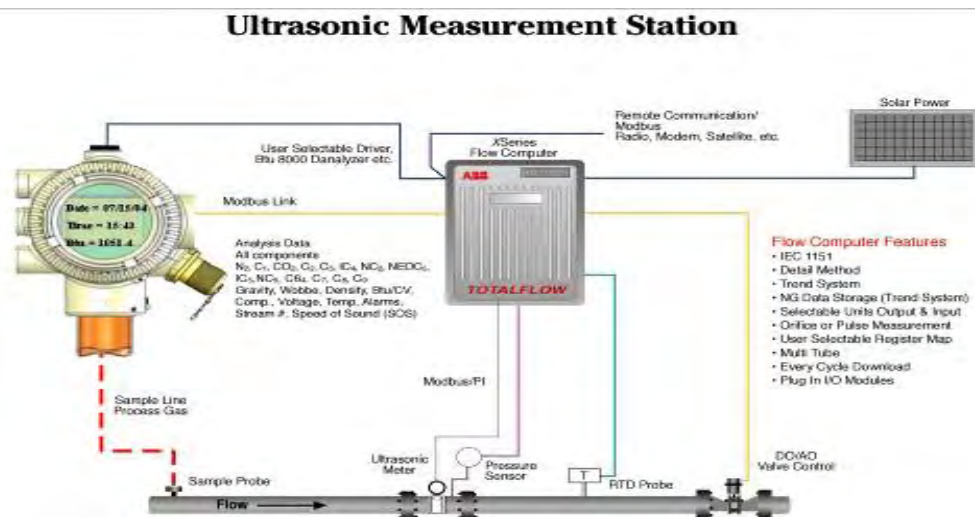
Feed Forward Plant Balance

- Provide compositional and heating value information for both sides of the plant balance equation.
- Provide data for fine tuning plant operations
- Monitor quality of input gas from supplier



Ultrasonic Gas Metering

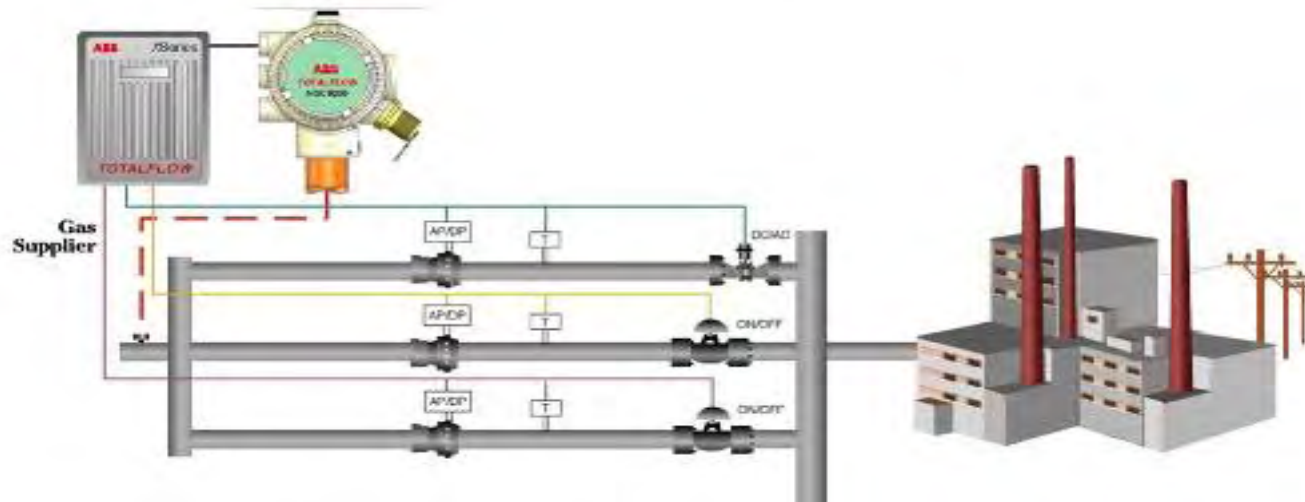
- Provides component analysis used in calculation of speed of sound (SOS)
- “On the fly” troubleshooting of meter with SOS calculation
- Onboard processor could be used for linearity curve fit routine for ultrasonic output
- Processing capability could be used to calculate difference between primary and check meter



Plant Process Analysis and Control

- Monitor quality of gas from different suppliers
- Provide important information for control of plant processes

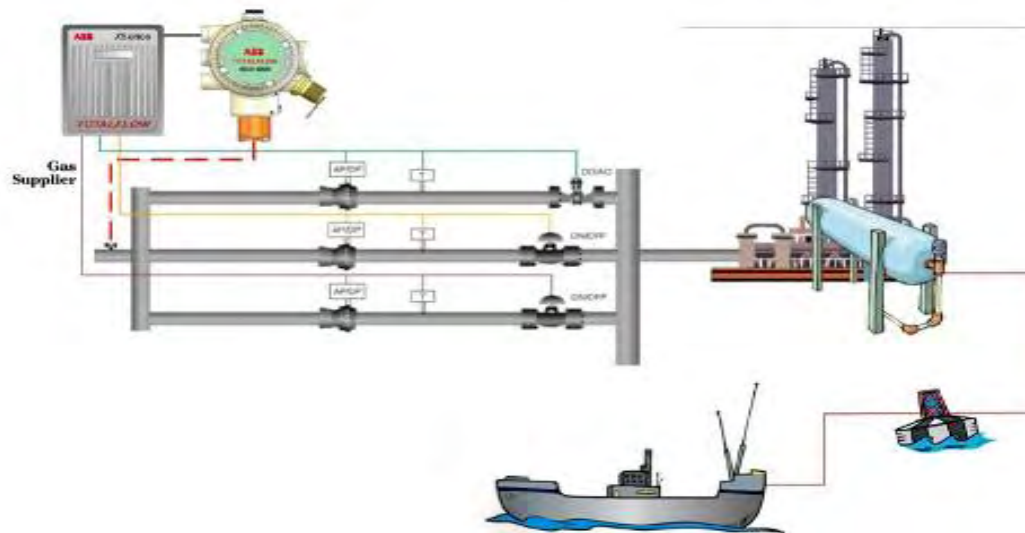
Btu Analysis/Control for Plant Processes



LNG Re-gasification

- Monitor Btu, gas composition, WOBBE, and density of gas from re-gasification plants
- Good check of efficiency of plant processes
- C9+ version (future) used to calculate hydrocarbon dew point of gas

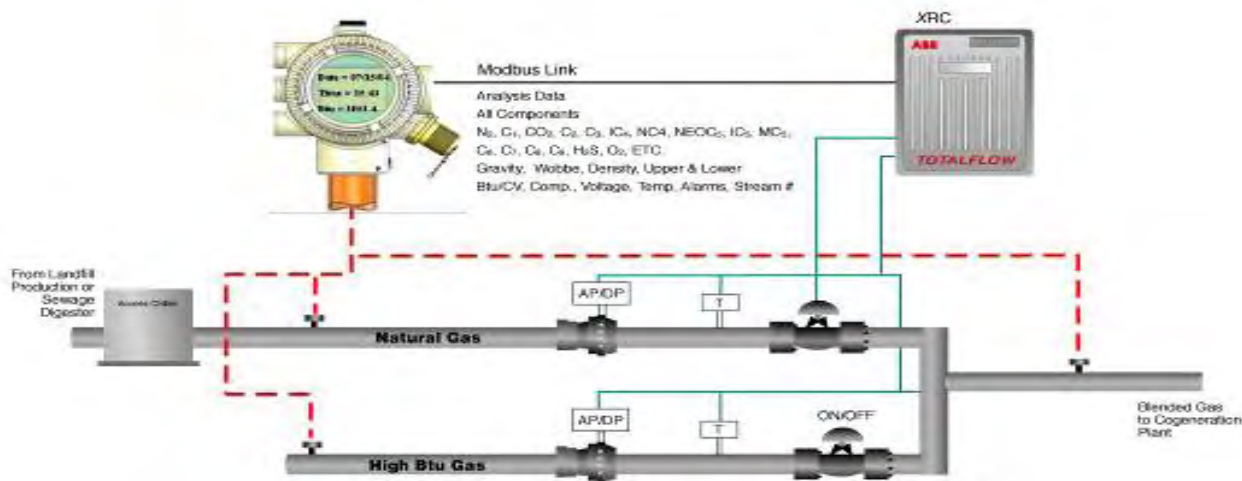
LNG Re-gasification/Blending



Blending Applications

- Provide continuous Btu and energy monitoring for blending or peak shaving applications
- Can monitor all gas streams, before and after blending interface
- Provide control output to blend for desired energy level
- Reduce maintenance by efficiently automating blending process

Landfill or Digester Gas Analysis and Blending



BTU Installation in Thailand,Australia & NZ



AGL -- Australia



NGC – New Zealand



Trans – Thailand Malaysia Pipeline



Petronas Malaysia



CALIFORNIA



■ Bakersfield



Installations In Petronas Gas Malaysia



Gas Metering Skid – Therms Measurement Station

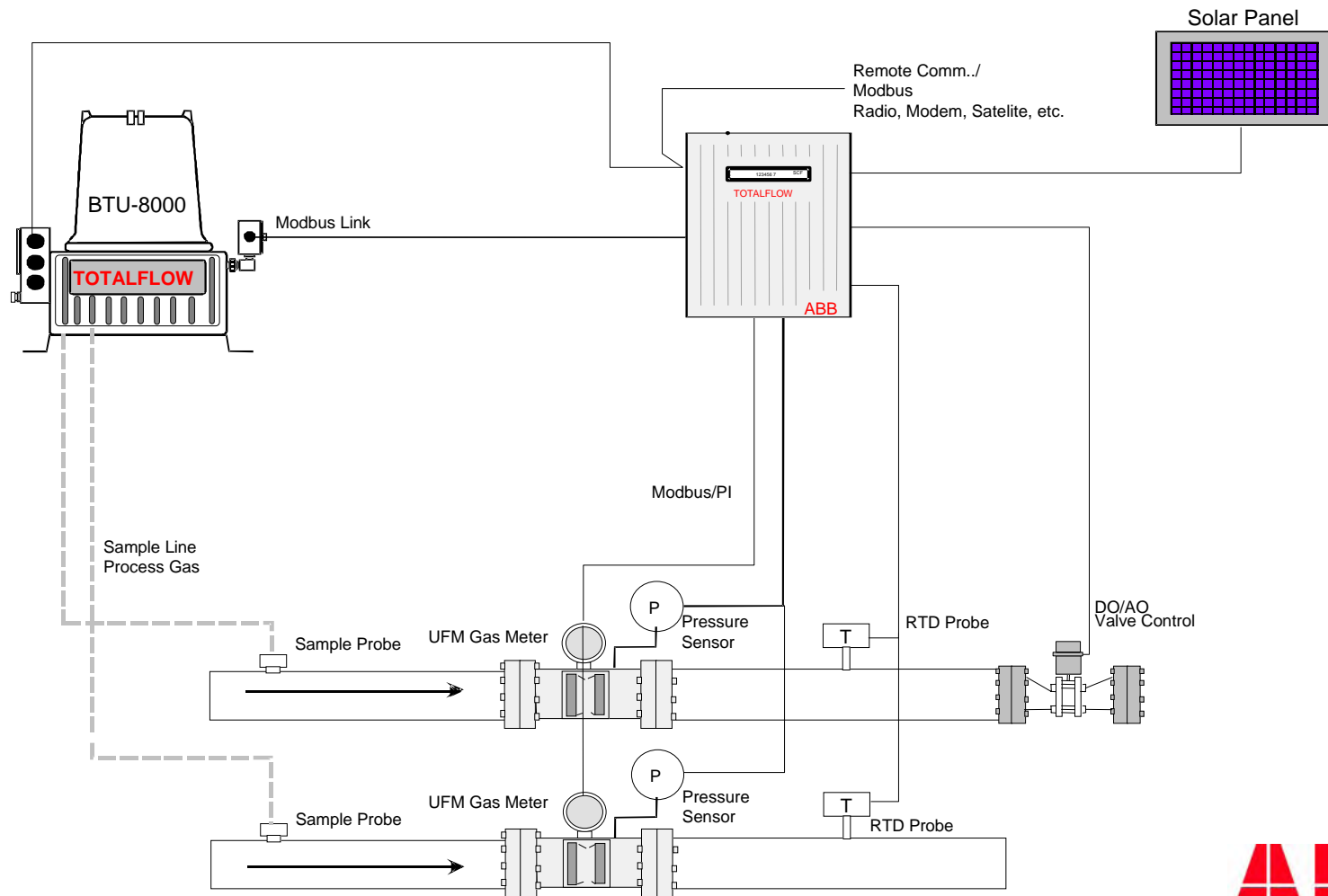
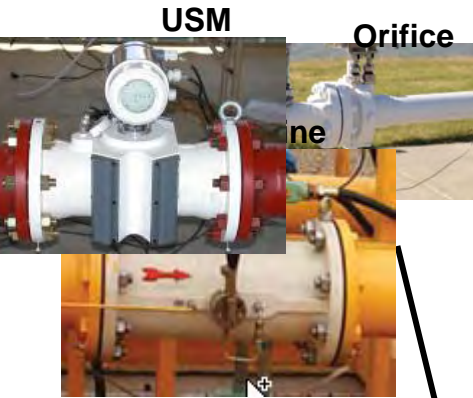


ABB Natural Gas Energy Metering System

Primary Meter (non-Totalflow)



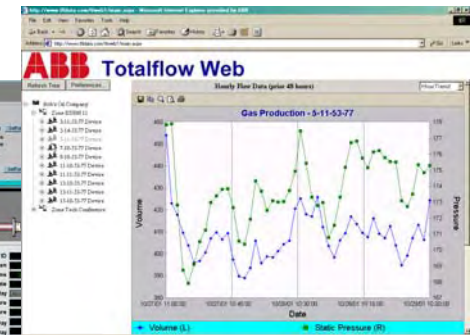
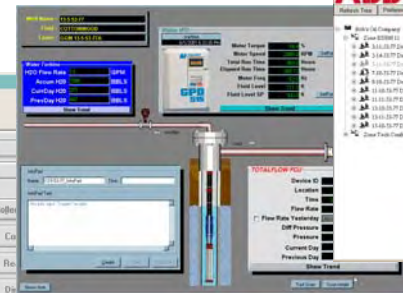
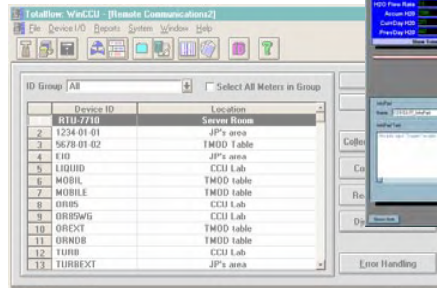
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BTU8000



XFC or XRC Flowcomputer or Remote Controller

- ABB Totalflow manufactures several measurement devices which establish a basis from which we can supply complete energy packages.
- Each metering system is designed around using the BTU 8000, RTU or Low Powered Flow Computer
- Preconfigured systems allow simple, efficient field installation and commissioning
- Complete system can be solar powered
- Each metering system easily integrates into host systems supporting both fiscal metering audit trail and SCADA requirements.



WinCCU, SCADA Vision &
TF.Net Host Systems



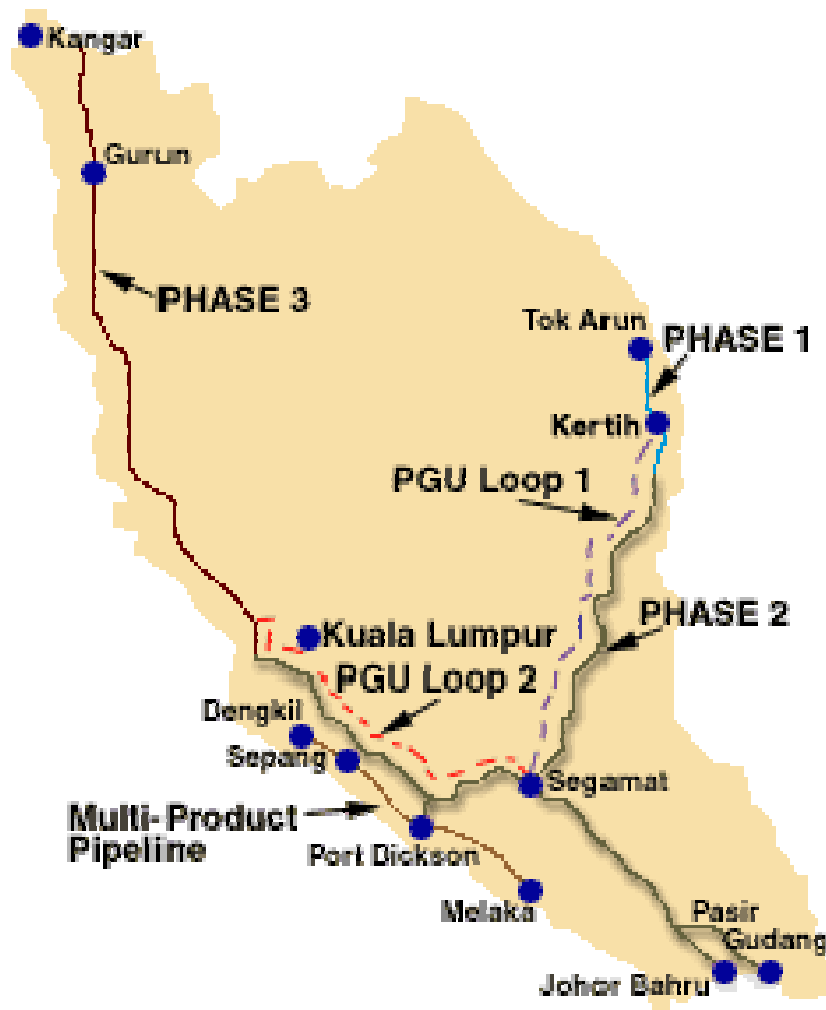
Pakistan 4"Energy Metering Skid – BTU8000 & XRC



Pakistan 6"Energy Metering Skid – BTU8000 & XRC



Malaysia



- Main line called Peninsular Gas Utilisation
- Matured network with 85% Totalflow installed base (FC & GC)
- TOTALFLOW has references at nearly every Petronas Gas stations and Power stations (TNB and IPP)

NGC 8200 series - TOP 10 FEATURES (1 of 2)

- **Lowest cost of ownership of any on-line GC which means customers can justify its use in applications where samplers are currently used. Lowest operating and maintaining cost.**
- **Highest precision of any on-line GC which means you get custody transfer quality measurement confidence.**
- **Entire GC is Div. 1 / Zone 1 explosion proof so it can be installed anywhere. NGC 8200 series local Chinese Pattern Approval.**
- **Has Modbus on serial ports, USB host and client, and Ethernet making the unit the most versatile remote communication option on any on-line GC.**
- **This GC has modular design for easy and rapid repair.**



NGC 8200 series - TOP 10 FEATURES (2 of 2)

- **This is the only GC with a graphical display on site so that both heating value and energy are available to field people.**
- **Smallest full featured on-line GC on the market which means it can be mounted on nearly any meter run or process pipe.**
- **The graphical user interface that runs on a laptop makes this the easiest on-line GC to use.**
- **The graphical user interface works either remotely or locally making the monitoring and troubleshooting as handy as your office.**
- **The engineers' interface, the PCCU Setup Mode, give the user almost unlimited versatility.**



Service and Support



Rich Media Startup Trainer



Quick after sales service & parts respond.



Quick Start-up Guide



Help files



Application Animation



On line training videos
(Requires Interwise Viewer)



User Documentation



Training classes



User Manual

NGC 8200 Series Family



NGC 8206



NGC with
Flow computer



NGC 8209



NGC Portable Unit



Mobile Unit



THANK YOU! QUESTIONS?



How to contact us:

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ABB

ABB

Who is ABB Totalflow?



- Product Group in ABB's Automation Technology Division
- Based in Bartlesville, OK
- EFM was started as R&D project with Phillips 66 in 1982
- Natural Gas Automation
 - Exploration & Production
 - Gathering
 - Transmission
 - Distribution



Gas Orifice Chart System Replacement

Chart Measurement System

- Chart Measurement (FCU)
- Chart Calibration (FCU,PCCU)
- Chart Collection (FCU,PCCU,CCU)
- Chart Integration (FCU)
- Volume Calcs (FCU)
- Chart / Volume Recalcs (CCU)
- Chart Archival (CCU)
- Data / Calcs Audits (FCU,CCU)
- Chart Operational Info (FCU,PCCU,CCU)



Totalflow Measurement System

- Flow Computer
- PCCU Handheld
- CCU Host Software
- (Communications Systems)

Gas Accounting

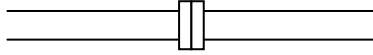
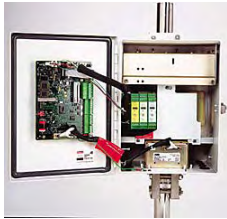


ABB Totalflow Offerings

- Remote battery powered flow computers (FCU)
- Remote battery powered RTU's
- Gas Chromatograph
- Windows PC and Networked Host Systems
- Windows Configuration Software
- Gas Industry Application Software
- System Integration / Project Management
- Specialized Customer Services
- Training

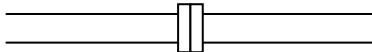


Totalflow Flow Computer Metering Products



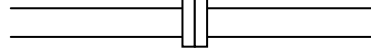
XFC

- DIV2 XSeries Flow Computer
- Integral Multivariable
- Battery, Charger
- 2AI, 2DI/PI, 2DO
- 3 Comm Ports
- Integral Comm Device
- Extendable IO / Software
- Gen Purpose Monitor/Control



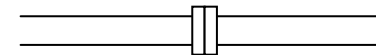
XFC

- DIV1 XSeries Flow Computer
- Integral Multivariable
- External Battery, Charger
- 1AI, 1DI/PI, 1DO
- 3 Comm Ports
- Extendable IO / Software
- Gen Purpose Monitor/Control



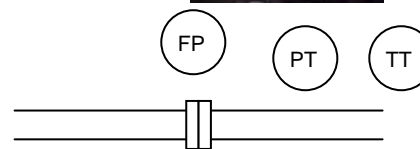
microFLO

- DIV2 uFLO Flow Computer
- Integral Multivariable
- Battery
- Charger
- 2 Comm Ports
- Integral Comm Device



XRC + Modbus MV

- DIV2 XSeries Remote Controller
- External DIV1 Modbus Multivariable
- Battery, Charger
- 5AI, 4DI/2PI, 4DO
- 3 Comm Ports
- Integral Comm Device
- Extendable IO / Software
- Gen Purpose Monitor/Control



XRC + Analog Transmitters
Same as any XRC

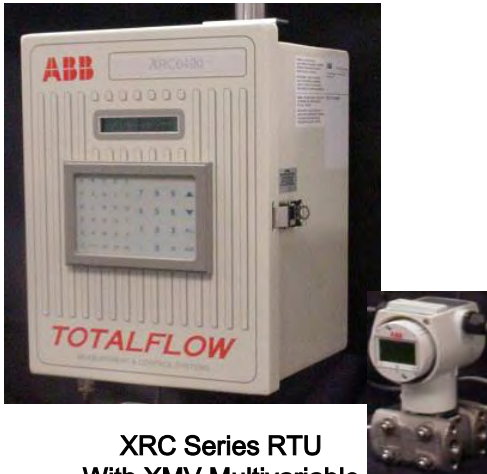
X Series FCU / RTU Family

Multiple Wellhead Measurement / Controller Choices

- Single or multi-tube measurement
- Wellhead data logging
- Well instrumentation
- Water flow rate (Pulse meter)
- Fluid Level Calculation
- Motor Starter Interface
- Remote Pump control (Star/Stop)
- Optional keypad on XFC and XRC (n/a on 6200EX)
- IEC 61131 programming capability
- Data Logger capability



XFC Flow Computer
With IMV multivariable



XRC Series RTU
With XMV Multivariable
And optional keypad

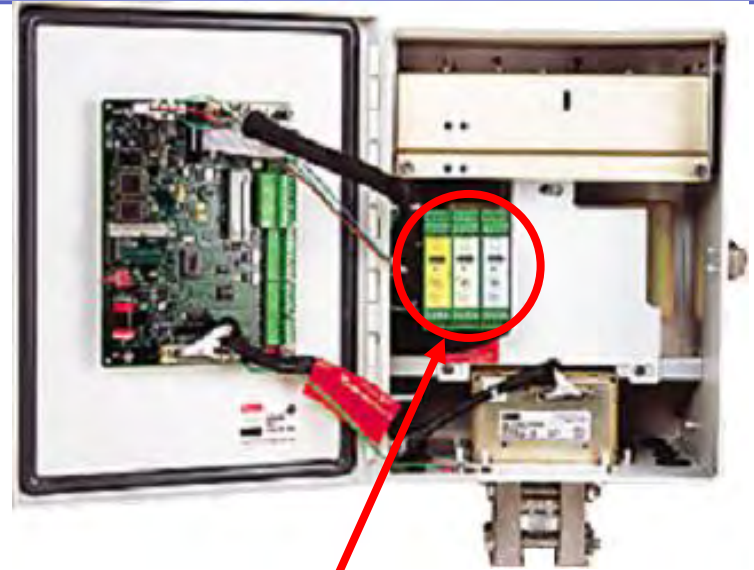


XFC 6210 EX
With IMV multivariable



XFC 6400/6700 Series Flow Computer

- **Integrated multivariable transducer (DP, P, T using RTD Temp element)**
- Low-cost single run or multi-tube design
- Aluminum powder coated enclosure
- CSA DIV 2 / ATEX ZONE 2
- Gas Flow Calculations per AGA / ISO
- Meets or exceeds API 21.1
- Differential and Linear Meters Supported
- 3 Com Ports on Base Board (1 Local, 2 Remote)
- Low cost communications kits
- On-board I/O:
 - 2 AI, 2 DI/PI, 2 DO
 - Battery & Charger Voltage
- Extendable I/O and Communications
 - 3 TFIO DIN modules (6400 series)
 - 6 TFIO DIN modules (6700 series)
- Software capability
 - IEC 61131 Languages for application specific math, alarming and logic



TFIO Modules

- (8) AI
- (4) AO
- (8) DI DO PI
- (2) DO, (6) DI DO PI, (1) AO
- (1) RS 232 or RS 485
- (4) TC
- (4) RTD



XRC 6400 / 6700 Series RTU

- Designed for use with linear meters and remote multivariable transmitters (XMV: DP, P, T)
- Low-cost single run or multi-tube design
- Aluminum powder coated enclosure
- CSA DIV 2 / ATEX ZONE 2
- Gas Flow Calculations per AGA / ISO
- Meets or exceeds API 21.1
- 3 Com Ports on Base Board (1 Local, 2 Remote)
- Low cost communications kits
- On-board I/O:
 - 5 AI, 4 DI/PI, 4 DO
 - Battery & Charger Voltage
- Extendable I/O and Communications
 - 3 TFIO DIN modules (6400 series)
 - 6 TFIO DIN modules (6700 series)
- Software capability
 - IEC 61131 Languages for application specific math, alarming and logic



Optional Keypad available on XFC or XRC

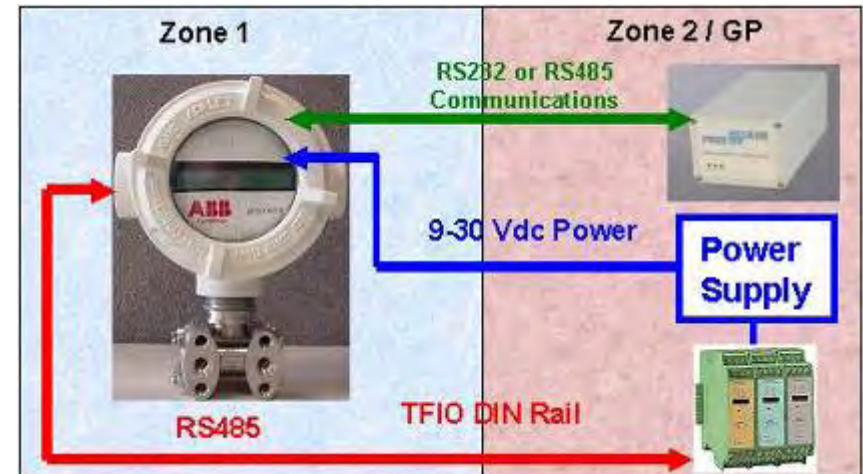


XMV Multivariable transmitter
(DP, P, T) for Orifice Meters



XFC 6200 EX Flow Computer

- **Explosion Proof CSA DIV 1 / ATEX ZONE 1**
- Single run using IMV or up to 4 meter runs using XMV Modbus multivariable transmitters (Diff Press, Static Press, RTD)
- XSeries software functionality, including IEC 1131 and Operations
- Gas Flow Calculations per AGA / ISO
- Meets or exceeds API 21.1
- 3 COM Ports (1 Local, 2 Remote)
- Externally powered from 9 to 30 VDC
- Std On-board I/O
 - 1AI, 1 DI/PI, 1 DO
- Optional I/O
 - 1 AO (daughter card within Ex)
 - All TFIO modules (using 2nd remote COM port as interface to TFIO modules on DIN rail in Div 2 area)

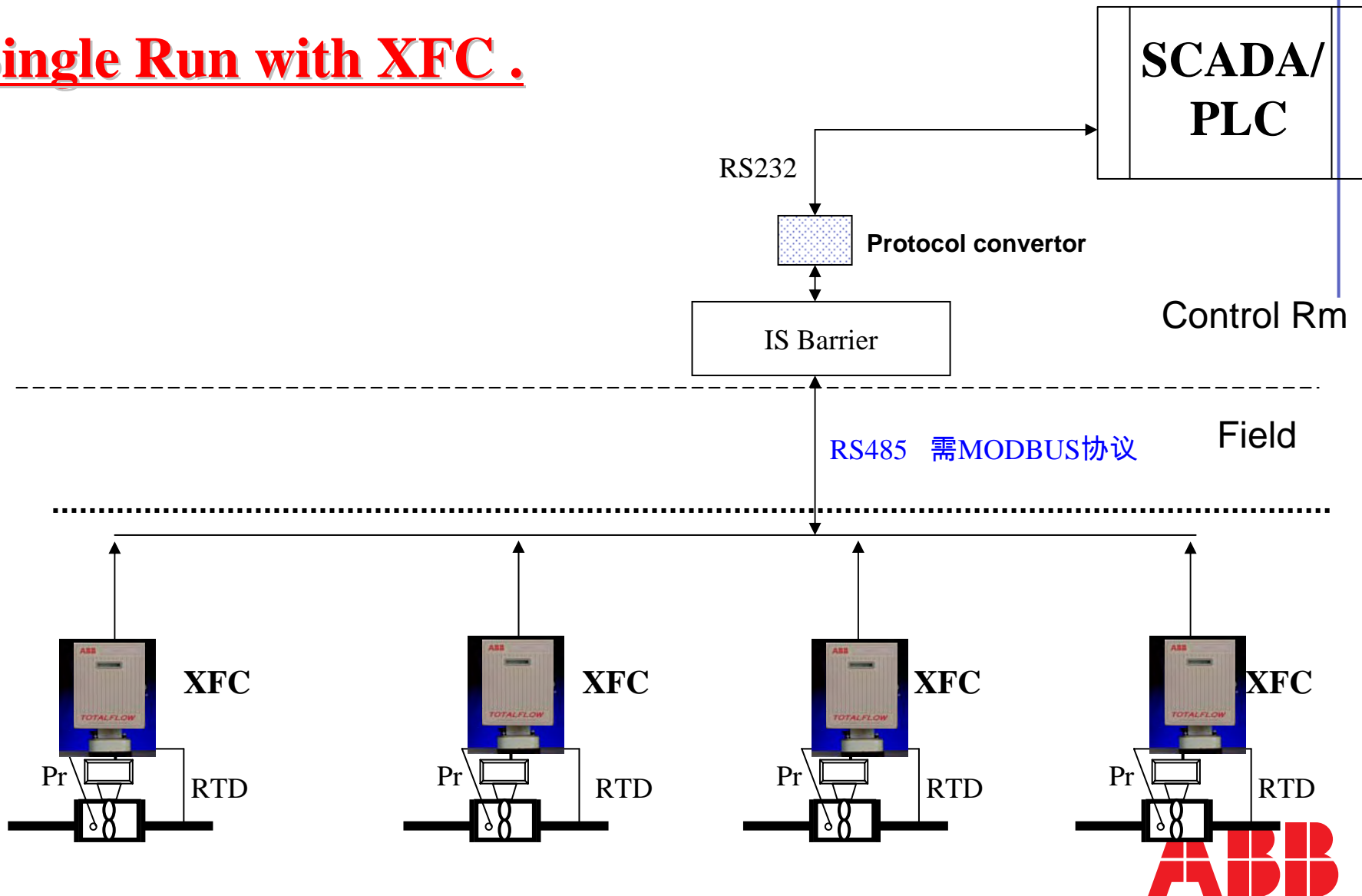


ABB



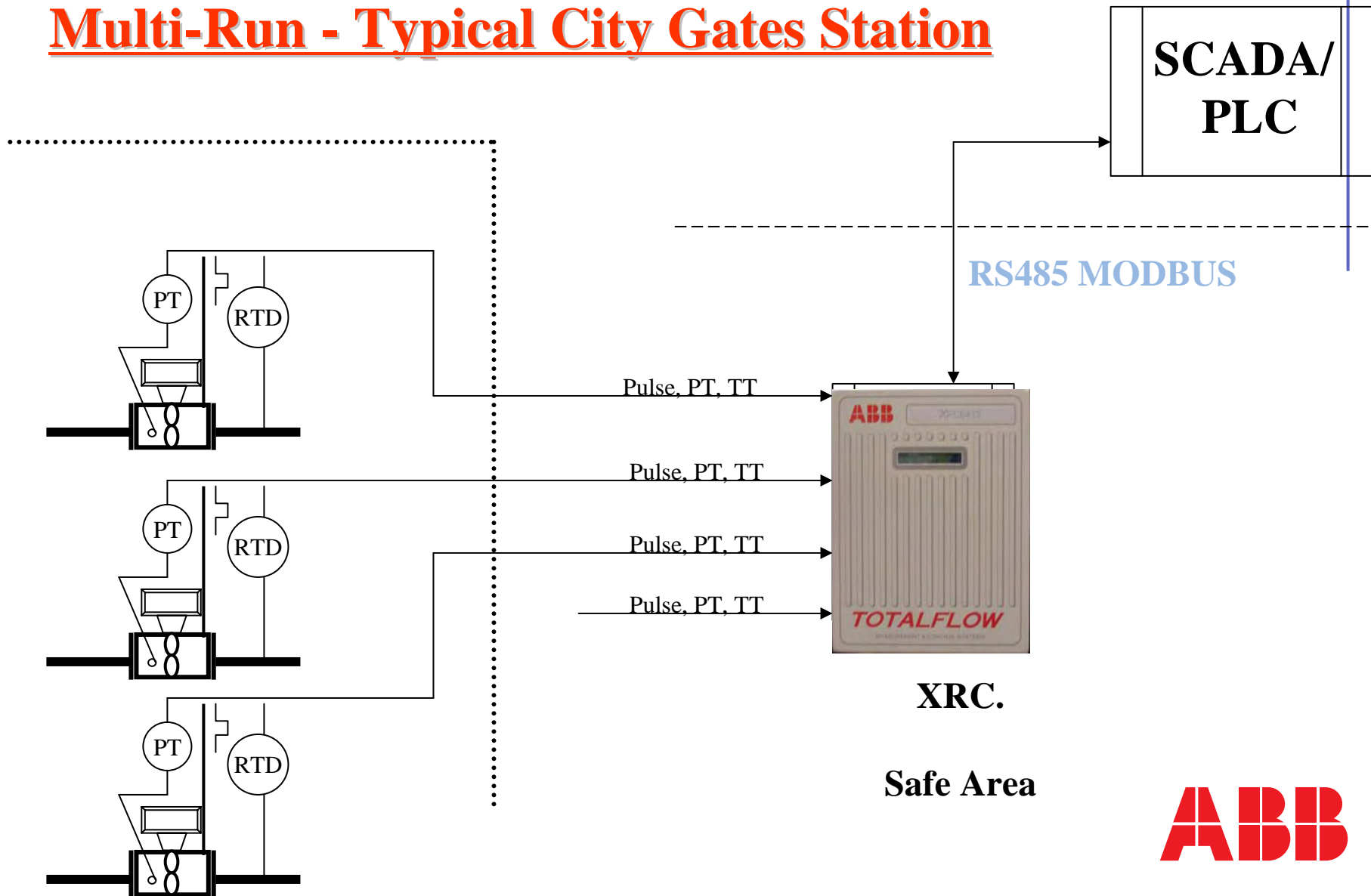
Natural Gas Single Run

Single Run with XFC .



Natural Gas Multi-Run

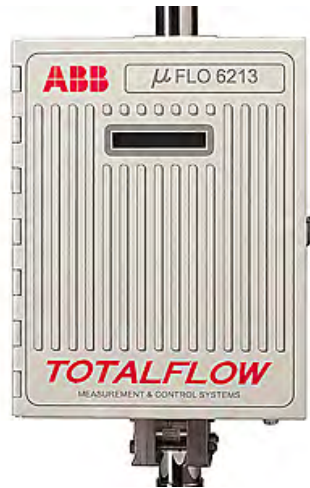
Multi-Run - Typical City Gates Station



Totalflow Flow Computer -- XFC & XRC Products



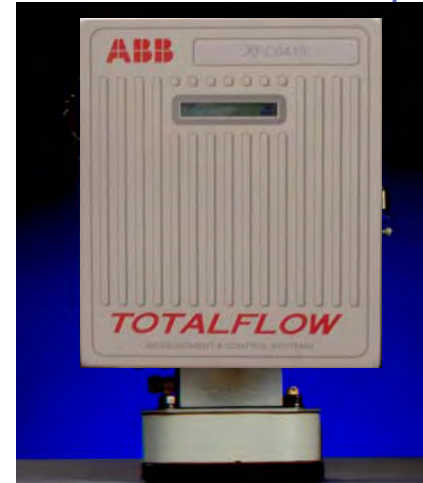
Orifice Ex FC



Orifice Div.2



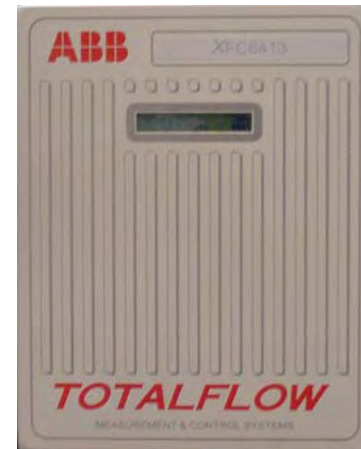
Linear Ex FC



Linear Div.2



XRC Keypad



XRC w/o Keypad



Typical Totalflow Applications



Wellhead Orifice Meter

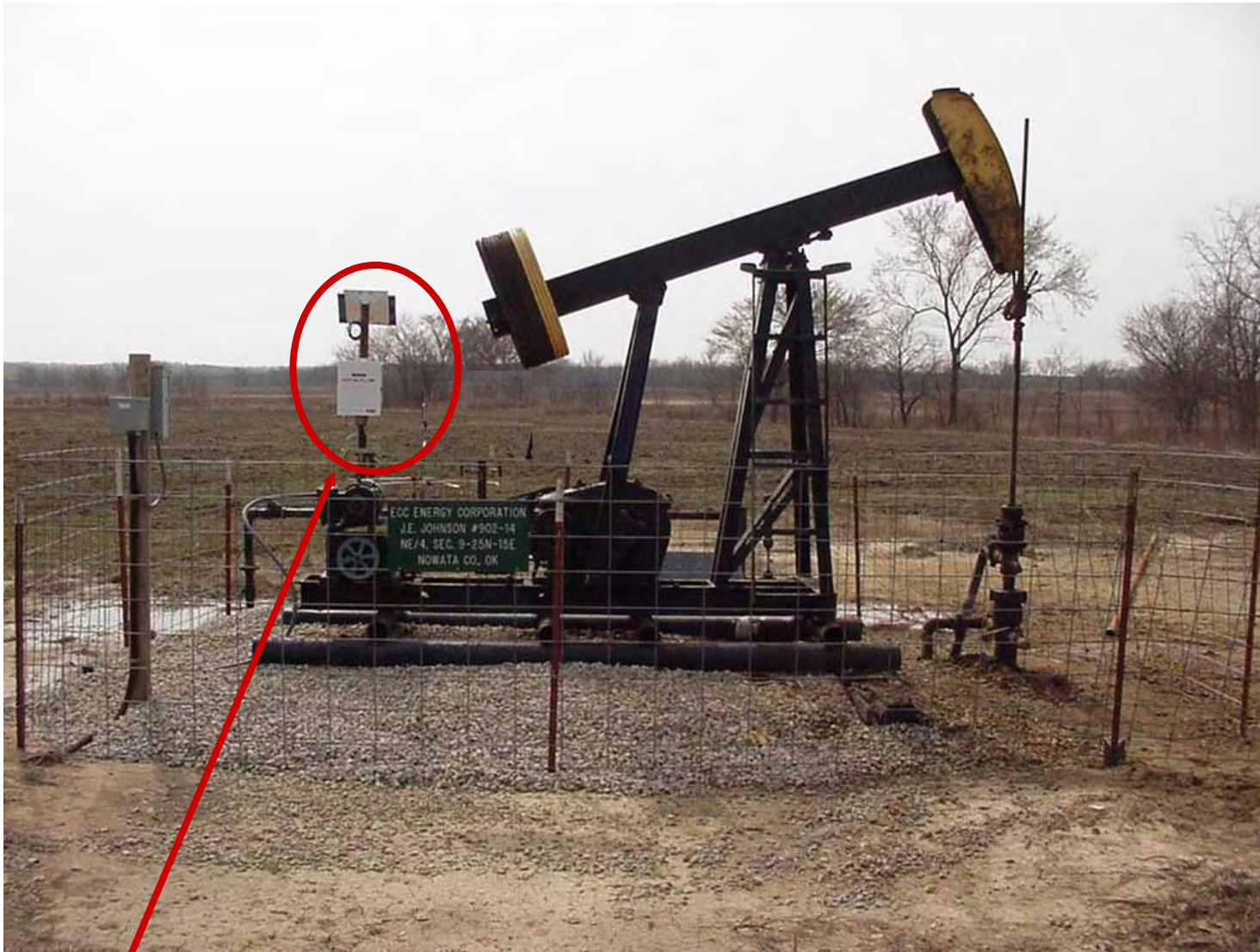


6210EX FCU

Typical XRC 6490 with XMV installed on orifice meter



Gas Measurement and Artificial Lift Pump Control



XFC 6413 measuring Gas and Controlling Water-lift Beam Pump



Gas Measurement and Artificial Lift Pump Control



XRC 6490 Monitoring Flow and Controlling a Beam Pump



CBM Wellhead Skid Package



CBM Production Unit with Totalflow Computer

Wellhead Orifice Meter



Typical 6200 EX "Direct Mounted" on orifice meter in CL1 Div 1 Area



XFC Installation In China and Vietnam



SHI JIA ZHUANG STATION



Gang Hua NG Ltd, Tong Xiang



HEBEI Natural Gas Tx CO.



PetroVietnam GDC



BTU Installation in Thailand,Australia & NZ



AGL -- Australia



NGC – New Zealand



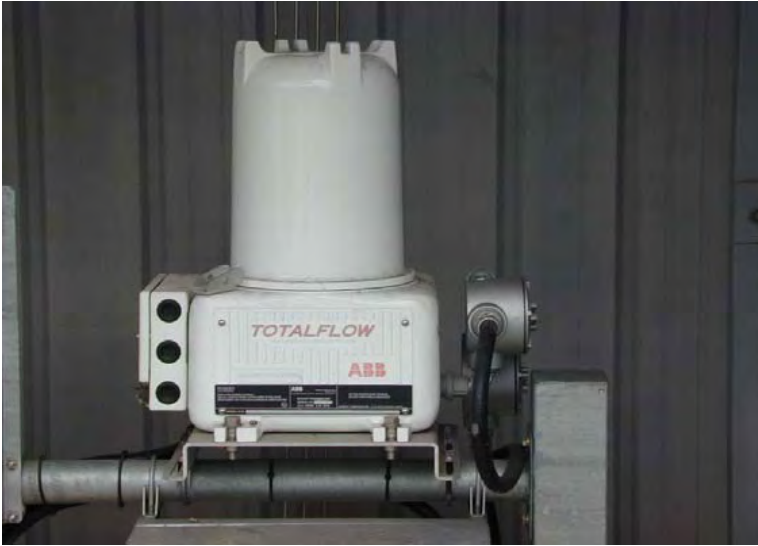
Trans – Thailand Malaysia Pipeline



Petronas Malaysia



Installations In Petronas Gas Malaysia



Gas Metering Skid – Therms Measurement Station

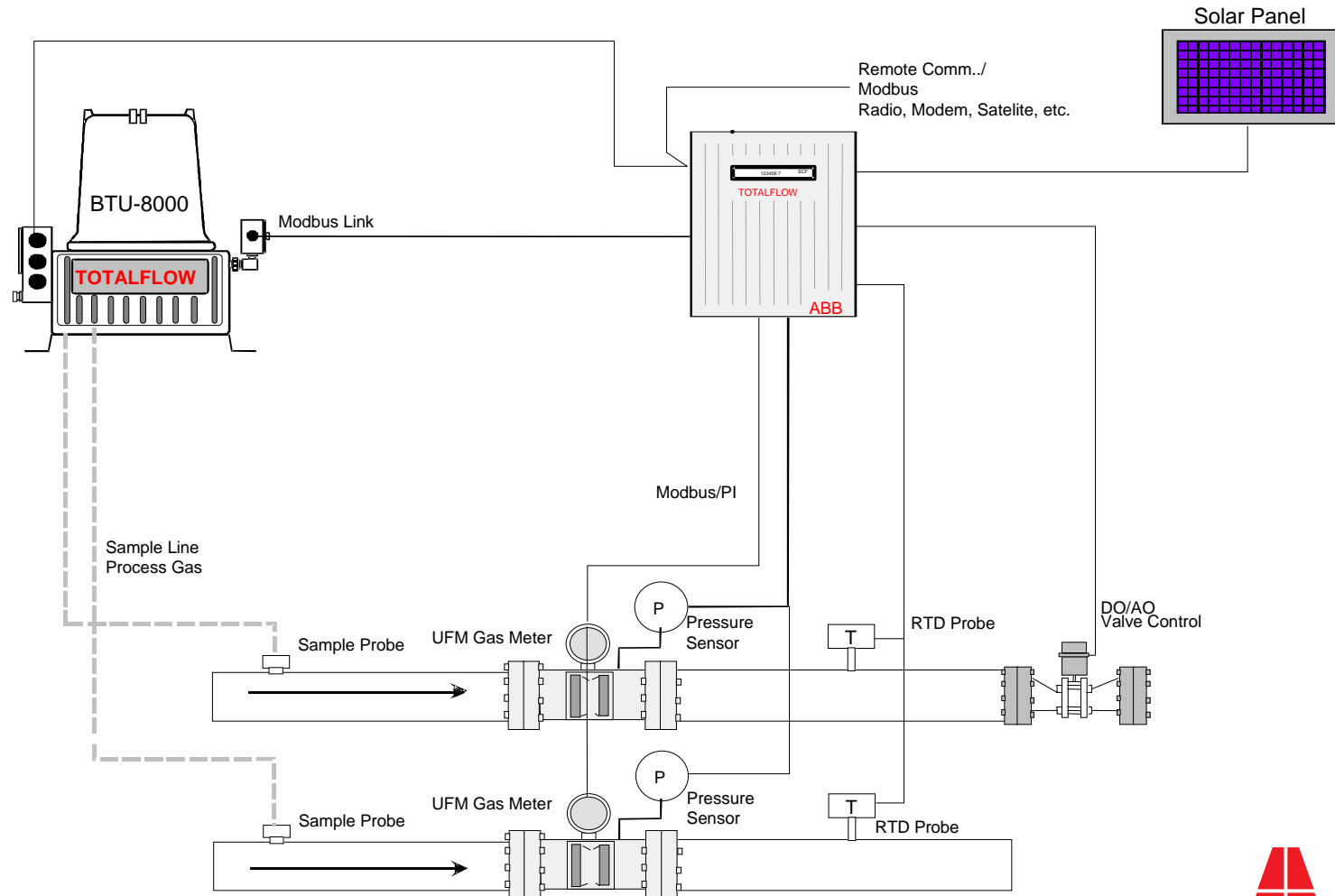
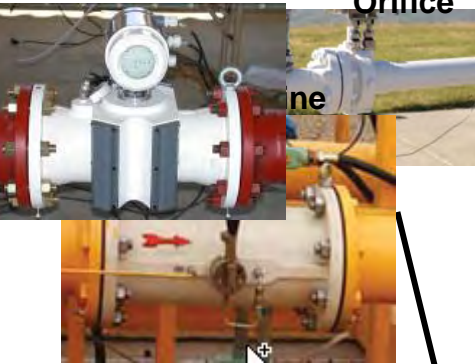


ABB Natural Gas Energy Metering System

Primary Meter (non-Totalflow)

USM

Orifice



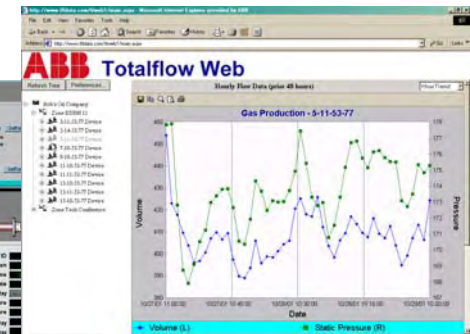
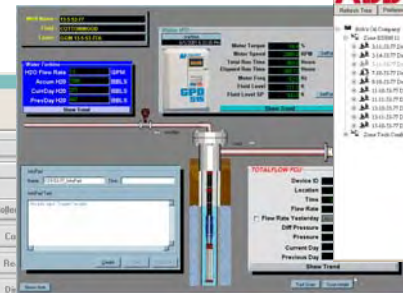
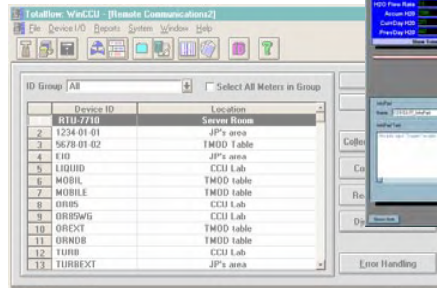
+

BTU8000



XFC or XRC Flowcomputer or Remote Controller

- ABB Totalflow manufactures several measurement devices which establish a basis from which we can supply complete energy packages.
- Each metering system is designed around using the BTU 8000, RTU or Low Powered Flow Computer
- Preconfigured systems allow simple, efficient field installation and commissioning
- Complete system can be solar powered
- Each metering system easily integrates into host systems supporting both fiscal metering audit trail and SCADA requirements.



WinCCU, SCADA Vision &
TF.Net Host Systems



Pakistan 4"Energy Metering Skid – BTU8000 & XRC



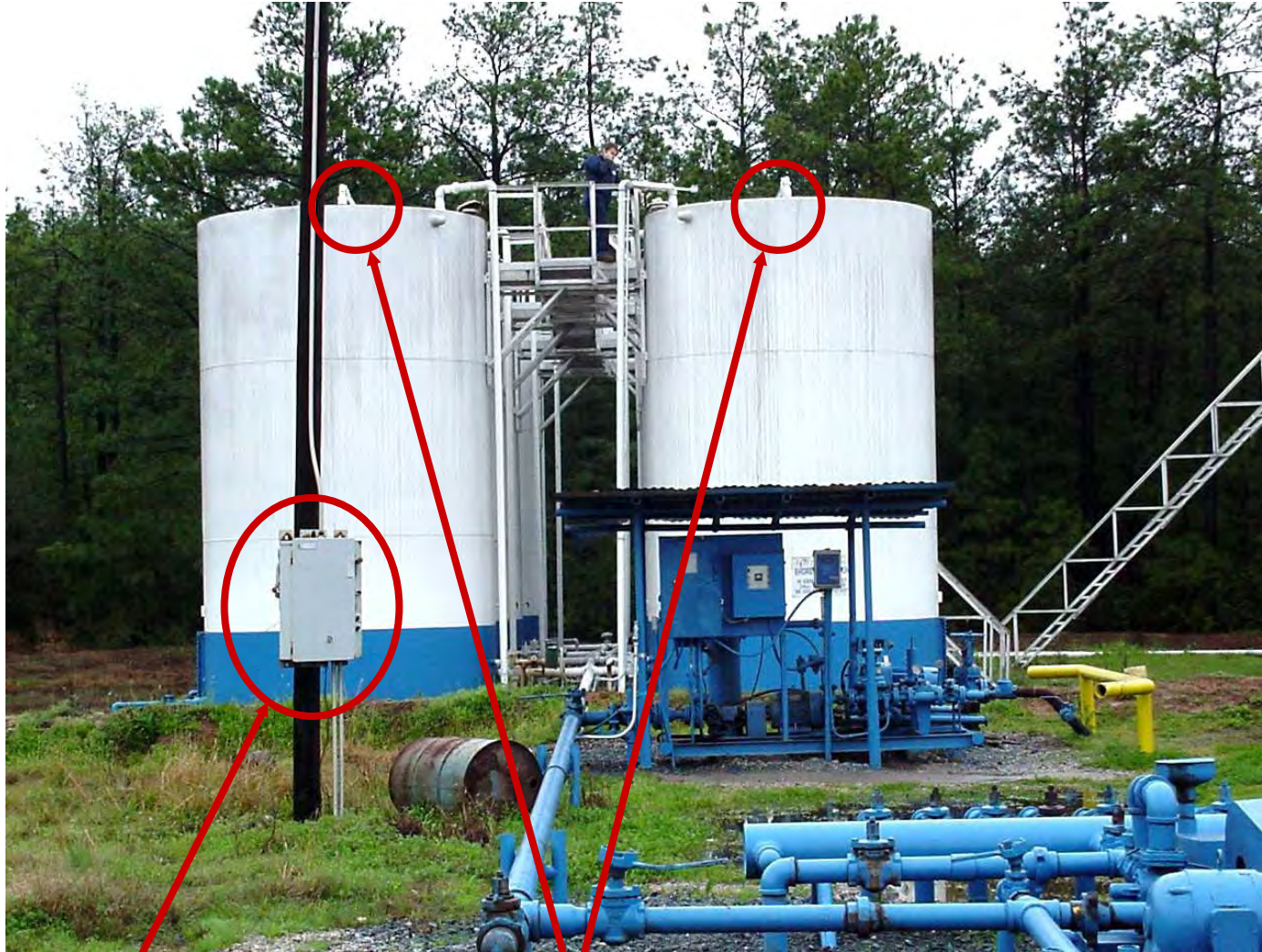
Pakistan 6"Energy Metering Skid – BTU8000 & XRC



ABB

ABB

LevelMaster Monitoring Tank Battery



2 LevelMaster Probes and Communication Module



Tank Battery Monitoring



XRC 6790 and LevelMaster on Tank Battery



ABB

Totalflow Host Software



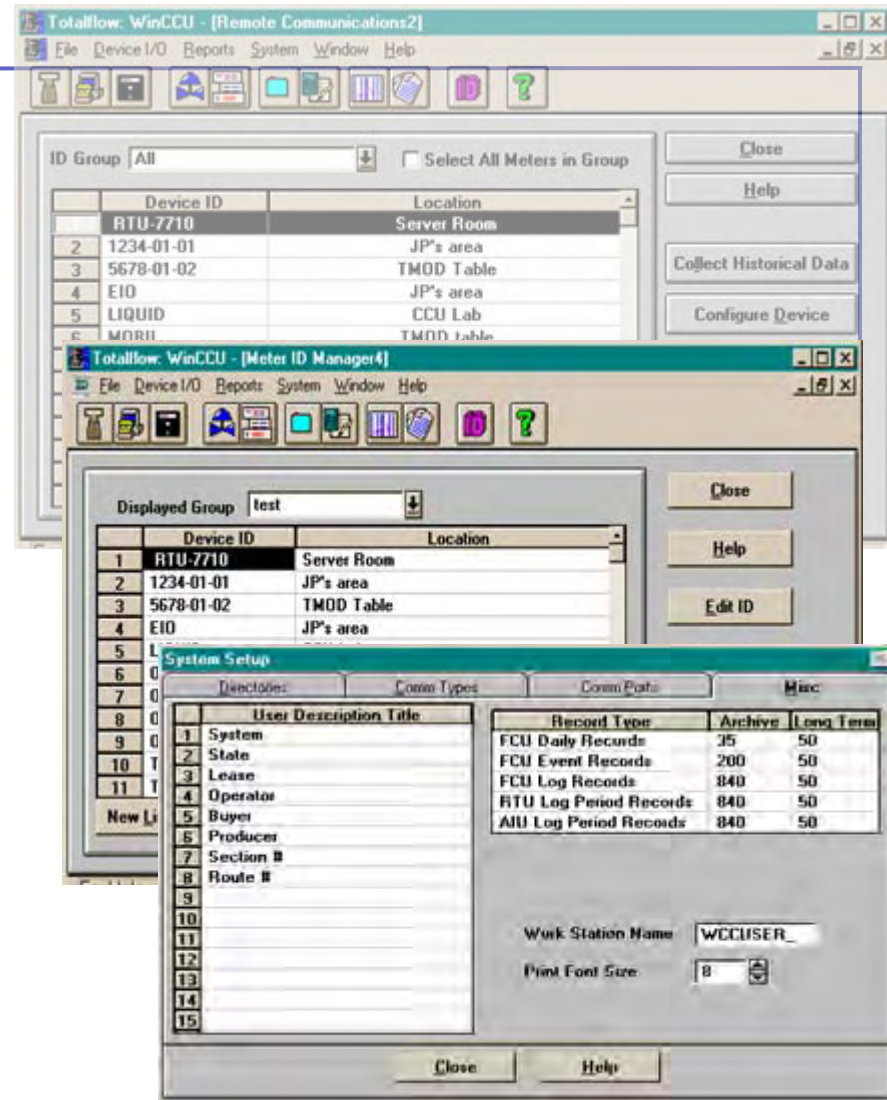
ABB Totalflow Host Software

- WinCCU32 (Winccu) – **Manage Custody Transfer Data**
Remote Communications with Totalflow Devices, Edit, Audit Trail, Long Term Data Base, Remote Setup
- PCCU32 (Pccu) – **Configure/Calibrate Flow Computers and Remote Controls**
Local Interface with Totalflow Devices for Setup, Local Data Gathering
- Voice Alarm System (Vas) – **Alarm & Status via Phone**
Callout on alarm, Remote Poll over Phone
- SCADAVision – **Scada System Designed for Oil and Gas Applications**
 - DVI – Polling Engine, Modbus, Totalflow (includes CPC code)
 - Server – Maintains Databases for Current and Historical Data
 - Client – User Displays, Maintain System with appropriate permissions
 - Link (Barnacle) -- Link to Existing SCADA Systems
- TF.NET / Web Data Services – **Browser Interface to ABB and other databases**
Totalflow acquires data into data base, then provides it via Web Pages accessible by Standard Browsers, provided as a Totalflow Service or can be installed on Customer Intra / Internet facilities. Part of Leased Data Services.



Totalflow (WinCCU) Central Collection Unit

- **Primarily for management of Custody Transfer Data**
- Windows NT/2000
- Network Capable
- Functions
 - Communications - direct, radio, modem, etc
 - Dual Database Archive
 - Long Term Audit Feature
 - Compliant with API 21.1
 - Reports - 14 Standard
 - Edit - Volume Adjustments compliant with API 21.1
 - Alarm - Polled or Exception
 - Export - To Other Systems
 - Interactive User Interfaces to Remote Equipment Data
 - Scheduler



Standard Applications

- Standard XSeries Applications
 - I/O Data Collection and logging
 - User defined math operations
 - User defined parameters displayed
 - AGA3 Meter Tube
 - AGA7 Meter Tube
 - Selectable Units AGA3/ISO5167 Meter Tube
 - IEC 61131
 - Valve Control
 - Units Conversion
 - Operations
 - XMV (External Multivariable Transducer)
 - Analysis Master
 - Analysis Slave
 - Protocol
 - Etc.



Application Instantiation

PCCU32 - [Entry]

Operate View Window Help

TOTALFLOW

- Communications
- I/O Subsystem
- Measurement
- Operations
- Display
- Holding Registers

Station Setup Applications Resources Registry

	Application	Type	Start Parameters
0.3.1	Application 0	System	
0.3.2	Application 1	Communications	Port = COM0
0.3.3	Application 2	Communications	Port = COM1
0.3.4	Application 3	I/O Subsystem	Port = COM2
0.3.5	Application 4	AGA-3 Measurement	Dir = AGA3-1
0.3.6	Application 5	AGA-3 Measurement	Dir = AGA3-2
0.3.7	Application 6	AGA-7 Measurement	Dir = AGA7-1
0.3.8	Application 7	Operations	
0.3.9	Application 8	Display	
0.3.10	Application 9	Holding Registers	
0.3.11	Application 10	Spare	
0.3.12	Application 11	Spare	
0.3.13	Application 12	Communications	
0.3.14	Application 13	I/O Subsystem	
0.3.15	Application 14	XMV Interface	
0.3.16	Application 15	Holding Registers	

Re-read Save Send Close Help

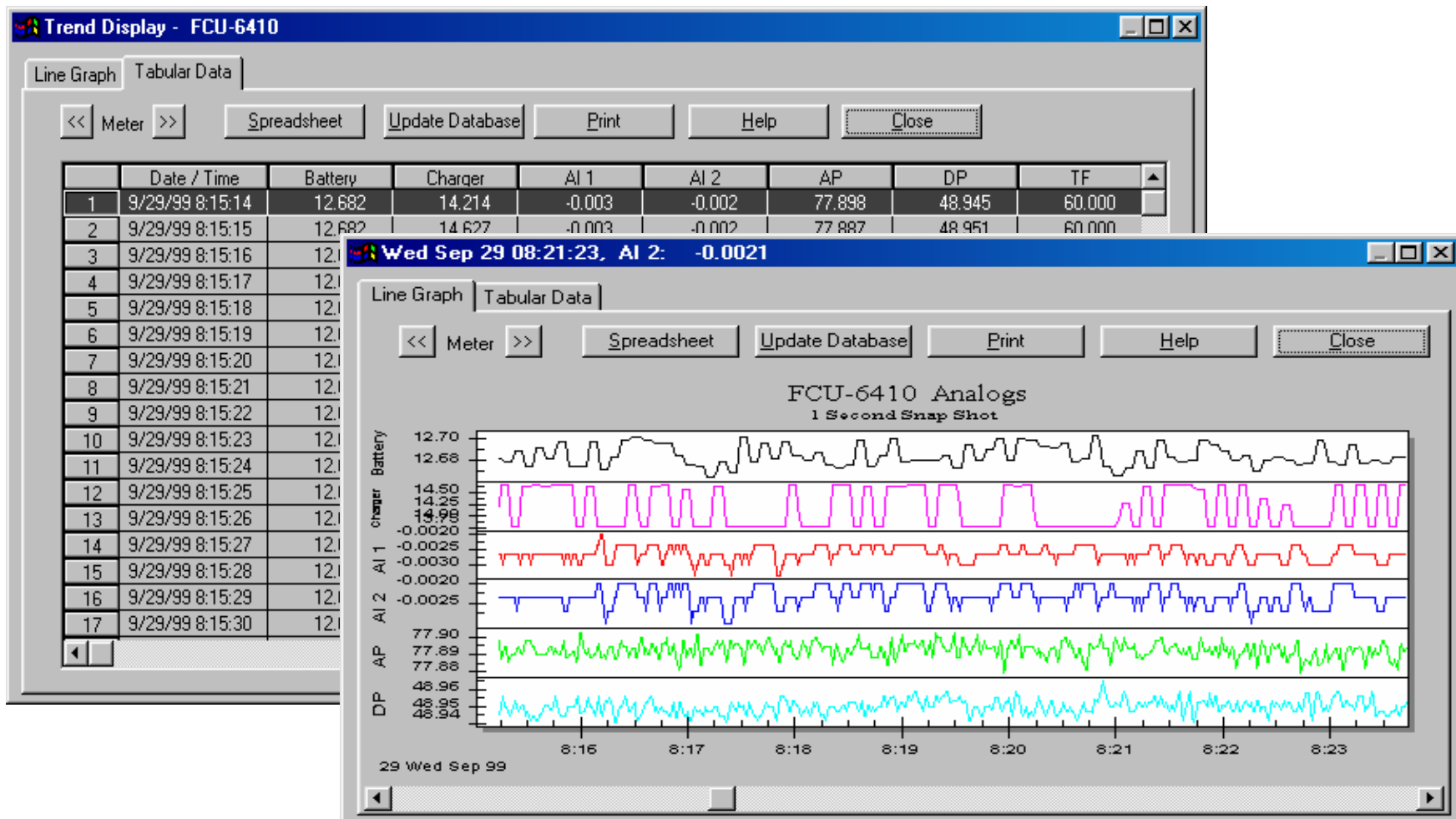
Ready Connected to TOTALFLOW Login: admin

Application (slot) number assigned to the selected application (object)

List of supplied objects (applications)

TOTALFLOW Trend System

- Line Graph and Tabular Screen Views
- Trend any variable, totally flexible



ABB

